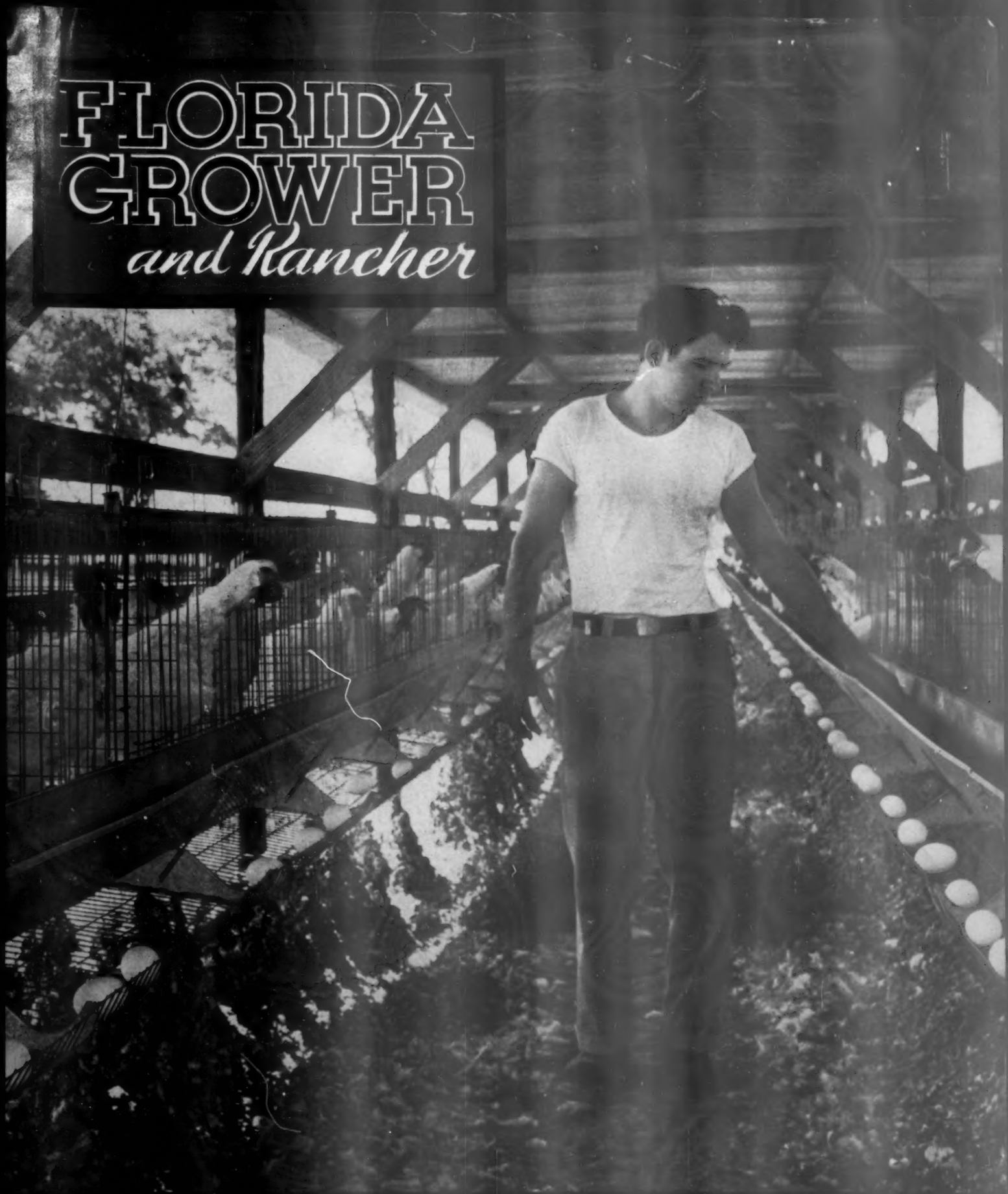
FLORIDA GROWER and Rancher



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and A Happy New Year!

December 1957
Price 10 Cents

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The Cover . . .

Joe Tabory, Masaryktown, is shown on this month cover stirring feed in one of the poultry houses owned by his two brothers and himself. An occasional stirring of the feed induces the layers to eat more feed, and thus lay more eggs.

FLORIDA GROWER AND RANCHER magazine does not recommend one type of poultry operation over the other. Whether he has caged or floor birds is a matter the individual poultryman must decide for himself.

There are more ground flocks than there are caged operations in Florida. However there are profitable and unprofitable operations in both types of egg production.

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COMING EVENTS

Dec. 2-7: Citrus County Fair, Inverness.
Dec. 5-7: Polk Youth Fair, Bartow.
Dec. 6-7: Shetland Pony Sale, Ocala.
Dec. 7: Cracker Day, Bunnell.
Dec. 14: Hauser Angus Sale, Crestview.
Jan. 11: Santa Fe Polled Hereford Sale, Alachua.
Jan. 15-18: Pasco County Fair, Dade City.
Jan. 16: Gulfstream-El Clair Sale, Fort Lauderdale.
Jan. 20-21: All-Breed Registered Bull Sale, Ocala.

How smart are YOU?

1. What is the name of the little cripple boy in Dickens' *Christmas Carol?*
2. How long have New Englanders been celebrating Christmas?
3. What was the first Christmas gift to the Christ child?
4. In what two gospels is the birth of Jesus recorded?
5. Can any native-born citizen, 35 years or older become president of the United States?
6. How many faces has a cube?
7. Who wrote *The Birds' Christmas Carol?*
8. Does corn have an even or an odd number of rows?
9. Are bats blind?
10. What animal is said to have, throughout history, caused more deaths than any other?

(Answers on Page 29)

FLORIDA GROWER AND RANCHER

TAMPA, FLORIDA — DECEMBER, 1957

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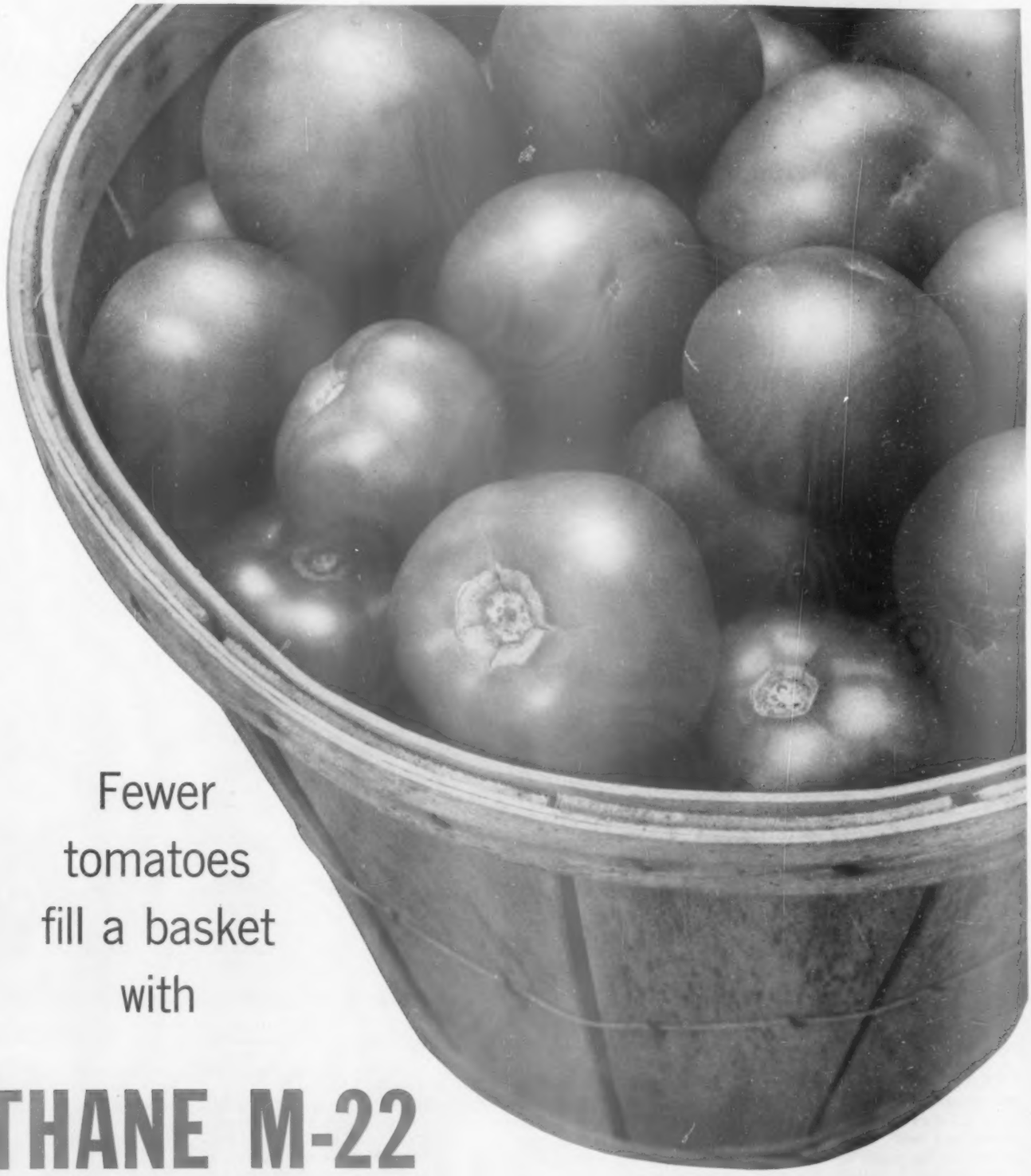
PRESS RUN THIS ISSUE 31,000

Season's Greetings from Florida Grower & Rancher



Fewer tomatoes fill a basket with

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Growers using DITHANE M-22 (maneb) find it takes fewer tomatoes to make a bushel. This follows from the way DITHANE M-22 controls diseases, helps the vine produce more big ones. DITHANE M-22 keeps down late blight, gray leaf spot, early blight and Septoria leaf spot. DITHANE M-22 protects the stems, fruits and foliage from *ALL* important fungous diseases—helps keep the vines lush and green, the tomatoes free of disease injury. Apply DITHANE M-22 and see.

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Get together with your NACO Field Representative soon. He's an expert on fertilizer problems in your area. He'll arrange for a free soil analysis at the modern Davison laboratories at Fort Pierce, and see to it that you get your own *custom made* NACO. Get *all* the fertilizer efficiency you pay for. Get NACO for *full* profit from *full* fertilization and complete insect control.

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Tons o' Goobers

PEANUTS—if grown by Victor Bradford of Levy County—can be a profitable crop.

Bradford, who farms near Raleigh (five miles north of Williston), has perfected a strain of nuts that he has named "Little Jack Bradford Runners." And if bushels-per-acre can be a yardstick, these may also be referred to as the "Peanut of the Future."

From his field of 43 acres allotted him by the government, his yield this year is approximately 4,000 bushels—or some 93 bushels per acre! Neighboring farmers using the same methods, but a different strain of nuts, are producing between 35 and 45 bushels per acre.

Of course, this excellent crop is not just luck. Bradford has beaten the other growers year after year . . . since developing the "Little Jack Bradford Runner."

Starting eight years ago, he planted three types of peanuts—the Florida Runner, the Dixie Runner, and the Virginia Runner—in hopes of finding an improved nut.

The first year, he saw no change; however he picked the best of nuts and used them for seed the second year. Of all the plants that grew from this seed, only one was different. The third year, Bradford planted the best nuts from the different plant—and had a start on what has developed into his own strain.

But still he did not have what he wanted. He had started with small commercial peanuts, and still had small commercial nuts.

During the winter months of the ensuing years consequently, Bradford and his wife and son would while away the long nights in culling the past year's crop . . . rejecting all but the very best.

This was a lot of hard work, but it has paid off in huge dividends. Starting with the commercial peanut, Bradford has improved the line to the point where he has a large, fully developed nut. And he believes that in a short time, it will be large enough to sell as a roasting nut.

One outstanding feature of the "Little Jack Bradford Runner" is the short time in which it matures after planting. Growers agree that the ideal time to plant peanuts is around the middle of April. This year, Bradford planted the 19th day of June—and harvested his crop the 19th of October, the same time that other peanut farmers gathered their April-planted crop.

Another feature is the runners that the plant puts out from the large stem. They travel from the stem and have large mature nuts on them.

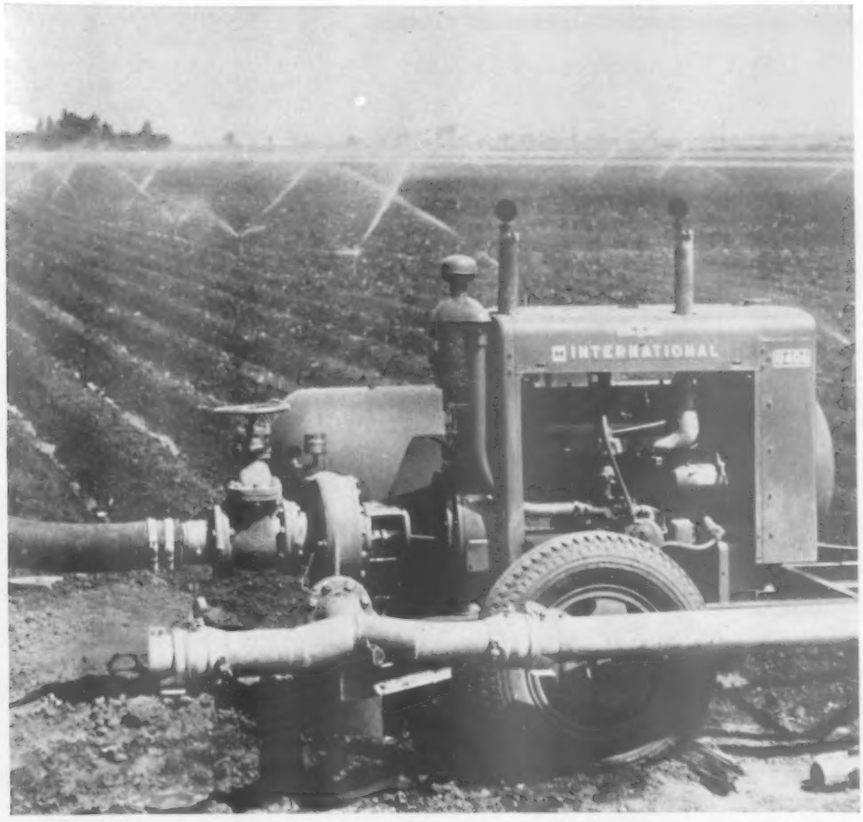
In the area around Raleigh, according to the ASC office, 52 bushels is the best yield that has ever been reported. Beyond a doubt, Bradford will hold the record this year with his 93 bushels per acre . . . and he believes that the sole factor in his bumper crop is the type of peanut he has perfected.

The land that this year's crop was planted on has lain dormant for the past three years. The soil is a white sandy loam, not different from the other land in the area.

Bradford will plant on the same land next year, because he has only a limited amount of land. However if he had his choice, he would prefer to wait until the third year to plant on it again.

PEANUTS OF THE FUTURE? Victor Bradford (left) and Levy County Agent Wilburn Farrell inspect the top-yielding new strain of peanuts developed by Bradford.

"There's No Substitute for International Dependability!"



CALIFORNIA. Bruce Church, Inc., largest lettuce grower in the Salinas Valley, completely saturates this lettuce bed for one-half the cost of surface irrigation with sprinkler system using International U-406 power unit and Pacific pump. Water is sprinkled at rate of 1,200 gpm at 75 pounds psi.

TEXAS. Joe Harrel, Ft. Stockton cotton rancher, tells why he uses International U-1091's on his 400-ft. wells: "When you have a small fortune invested in a crop that can be wiped out in a few days without rain, you don't substitute anything for International dependability." Baker pumps set at 300 feet operate up to six months yearly.

FLORIDA. Normandy Farms Corp., Ft. Pierce, gets up to 7½ tons of tomatoes per acre from 175 acres sprayed by two portable International U-220 power units each with a high-pressure, large area 100 B Rain-bird sprinkler. Manager J. T. Taylor states, "I prefer IH power units for dependability, long life, and parts availability."

Here in Florida your net profit from crops is directly dependent upon power you can rely upon to irrigate or drain your fields during critical growth periods.

That's why it's just sound business practice to use engines with a reputation for satisfactory service, about which owners from coast to coast say: "There's no substitute for International dependability."

You as a power user get even more than all-important dependability when you select an International. You get more value for each of your pump power dollars; a right-size engine for any pump; equipped with factory installed and tested carburetion to burn the fuel of your choice; and the best parts and service support in the industry.

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See the man who can expertly fit any one of these 21 extra-value engines to your system—your nearby International Power Unit Distributor or Dealer. You'll discover his after-sale service, his shop and field service facilities, his parts stock is all you expect and more.

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Machinery MAINTENANCE

By S. E. DOWLING
Assistant Agricultural Engineer

The Storage Battery And Its Care

STORAGE batteries are used on all internal combustion engines with a battery ignition system. The battery is used to give power through the starter to turn the engine fast enough for starting.

Usually, tractor storage batteries have a larger electrolyte capacity —thus requiring relatively less frequent filling with water. But even with this better battery, there is *still* a need for water. *The lack of water in tractor batteries is probably the greatest cause for battery failures and need for replacement.*

Batteries should be checked for water at least once a week; oftener, if necessary. The water level in the battery *must* be kept up at all times.

Quality of water used is very important; it should be distilled water or soft water. If neither of these are available, the next best choice is any water that is fit to drink.

The state of charge of the battery is another important point that will help the tractor owner to receive a satisfactory length of service from the battery. It should be kept fully charged, and not allowed to overcharge. Be sure that the voltage regulator or cutout is working properly on the tractor or power unit.

A good instrument to have on the farm, ranch or grove—to check the charge of batteries with—is the hydrometer. This instrument looks sort of like a syringe, with an object which floats in the glass tube part. When the battery solution is sucked into the tube, the float will seek a level; then the specific gravity can be read on the float, where it stands in the solution.

Most batteries are fully charged when they have a specific gravity of 1280. They should be kept as close as possible to this fully-charged condition.

If the battery is below the fully-charged mark, it should be placed on a slow charge and brought up to a fully-charged condition. It is possible, through a slow charge, to recharge a battery that does not respond to fast charges and which might otherwise be discarded.

Every time a battery is charged, it should be checked with a hydrometer to see that it is *fully* charged. Do not ever put a half-charged battery in a tractor and expect to get good results from the tractor charging it for you.

A difference in the readings of the hydrometer of .25 or more between cell readings in the same battery is an indication of a bad cell. This difference can correct itself on a slow charge; but if it does not, the battery will fail and will need replacing.

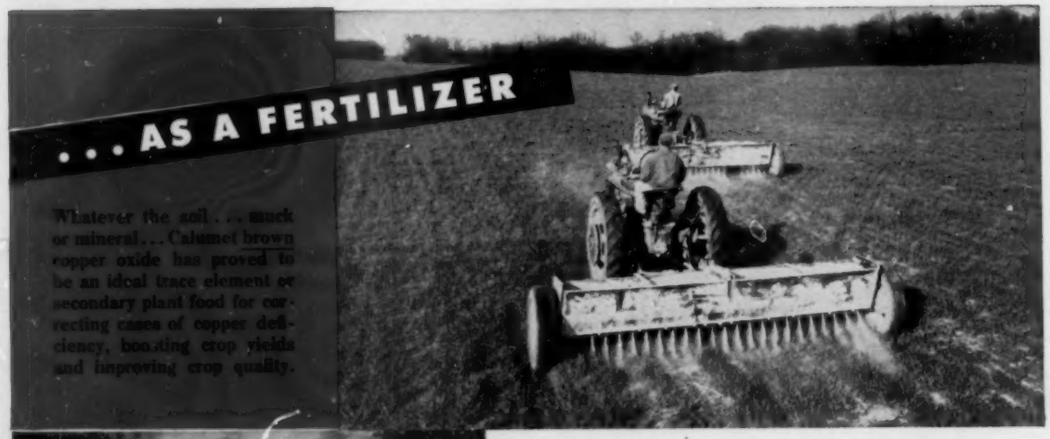
Frequent checks should be made of all cables and connections. To help prevent battery and starting troubles, replace faulty cables as soon as they are located.

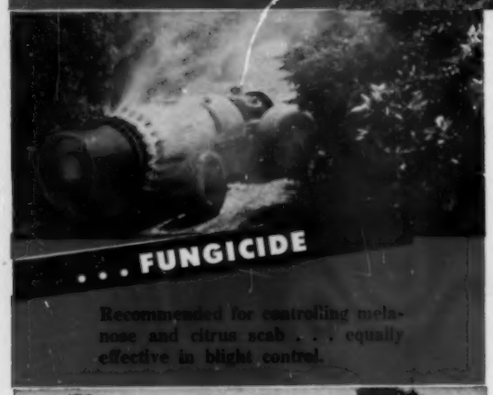
When connections are found in a corroded condition, they should be cleaned by mixing a paste of baking soda and water and applying this to the terminals. After this has stood for a few moments, it should be flushed off with water and should leave a bright clean terminal. Next, the connection should be tightened, and a small dab of grease applied to prevent or retard further corrosion.

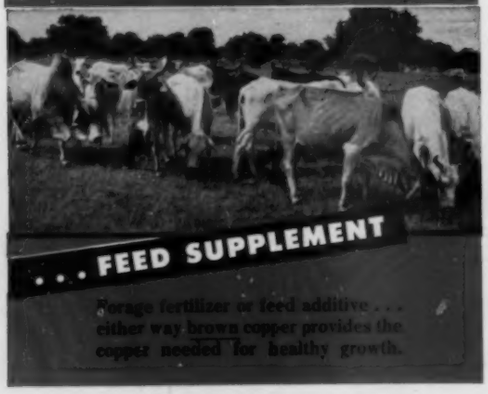
Treat the battery with the proper care and service it requires, and the reward of a long, satisfactory life will be forthcoming.

FOR BETTER CROPS, HEALTHIER STOCK

CALUMET BROWN COPPER OXIDE


. . . AS A FERTILIZER
Whatever the soil . . . muck or mineral . . . Calumet brown copper oxide has proved to be an ideal trace element or secondary plant food for correcting cases of copper deficiency, boosting crop yields and improving crop quality.




. . . FEED SUPPLEMENT
Forage fertilizer or feed additive . . . either way brown copper provides the copper needed for healthy growth.

No question about it . . . Calumet *brown* Copper Oxide provides the fertilizer, fungicide, feed supplement *flexibility* crop and stock men are looking for. And that's not all! Consider, too, some of the other outstanding advantages of *brown* copper . . .

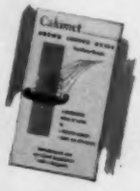
PROLONGED AVAILABILITY—low solubility rate minimizes leaching, makes copper available over longer time period.

UNIFORM CONCENTRATION—solubility characteristics make *brown* copper available to plants at more constant rate.

HIGHER COPPER CONTENT—*brown* copper contains twice as many copper units per pound as highly soluble copper salts.

GREATER PLANT SAFETY—lower toxicity offers a wider margin of safety than the more soluble forms of copper.

LOWER COST, EASIER HANDLING—highly concentrated copper content (75% minimum) results in less material to ship, lower freight costs. Less bulk also makes *brown* copper easier to handle on the job . . . in the warehouse.



Want more details? Send for Calumet's free, informative booklet on brown copper oxides. It's yours for the asking so write for your copy.
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Citrus Amendments In Effect

DECEMBER 2 was the effective date for the new amendments to the Federal marketing agreement and order regulating the handling of citrus fruits grown in Florida.

There are six principal amendments in the list adopted by the USDA after a public hearing held last February and a September industry-wide referendum. These major amendments:

(1) Add tangelos as a fruit subject to grade and size regulation under the program, which for years has included grapefruit, tangerines, oranges and temple oranges.

(2) Extend regulations to cover all exports, as well as shipments, to intra-state markets beyond the roadguard stations in Florida. (This has the effect of providing grade and size regulations for fruit shipped into the portion of Florida north and west of the Suwannee River.)

(3) Authorize separate grade, size, condition and container regulations for fruit exported to destinations other than Canada and Mexico.

(4) Permit the establishment of minimum standards of quality and maturity when prices exceed parity.

(5) Revise the provisions relating to inspection.

(6) Clarify the scope of the present exemption covering fruit shipped for conversion into by-products.

USDA action in adopting the amendments to the 20-year-old marketing agreement followed approval of the amendments by 96% of growers voting and by 96% of the volume of fruit represented in a referendum conducted September 7-14. The agreement was then signed by handlers of 64% of the oranges, grapefruit, tangerines and tangelos shipped during the 1956-57 marketing season.

Florida's 1958 Peanut Acreage Allotment Set

Florida has been allotted 54,915 acres of peanuts for picking and threshing in 1958.

Sixteen states were included in the national allotment of 1,610,000 acres of 1958-crop peanuts for picking and threshing, and in a marketing quota of 826,000 tons, recently announced by Acting Secretary of Agriculture True D. Morse. Both the marketing quota and the national acreage allotment for the 1958 crop are at the levels required by law.

Georgia—with 525,929 acres— received the largest peanut acreage allotment. The other five states which received larger allotments than did Florida were:

Texas, 355,955 acres; Alabama, 218,513 acres; North Carolina, 169,237 acres; Oklahoma, 137,668 acres, and Virginia, 105,807 acres.

Southern Farmers Buy More Trucks

U. S. farmers bought almost a half-million motor trucks (498,000) in 1955, according to estimates recently released by the USDA's Agricultural Marketing Service and the Bureau of Census.

Nearly one-half of these trucks (230,000) were bought by farmers in the South; about two-fifths (200,000), by farmers in the North, and about one-seventh (68,000) by farmers in the West.

Breakdowns of new and used trucks bought by farmers of the three geographical regions are: South—79,000 new trucks, 151,000 used trucks; North—60,000 new trucks, 140,000 used trucks; West—25,000 new trucks, 43,000 used trucks.

Country-wide, two-thirds of the trucks were bought used. About three-fifths as many trucks were traded in or sold by farmers as were purchased.

In the North and the South, about 10 trucks were bought by farmers for each 100 farms. In the West, farmers bought 16 trucks per 100 farms.

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PREMIUM
Premium quality fertilizer certified through use of a balanced combination of the water-soluble magnesium and potash obtained from
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Look for this identifying Seal of Approval when you buy. It's your assurance of extra-value fertilizer.

...the seal that guarantees you **won't be**

TOO LATE for TOP PROFITS

You know the penalty of a shortage of magnesium in your citrus groves. Irregular yellow blotches in the leaves signal that you will soon be faced with a marked reduction in yield, size, and quality of your fruit. And then, before you know it, *it's too late for top profits!*

You can't afford to gamble with your next harvest . . . not when positive protection, plus improved fruit flavor, can be yours for only pennies per tree. Act now to insure an adequate supply of magnesium this season by specifying fertilizer containing Sul-Po-Mag®... also called SPM . . . in your next fertilizer order.

Why SPM? Sul-Po-Mag is a combination of water-soluble, fast-acting, readily available magnesium and premium sulphate of potash. Most citrus fertilizer manufacturers make premium grade fertilizers containing Sul-Po-Mag. For your protection, look for the SPM seal.

USE FERTILIZER CONTAINING

Sul-Po-Mag ...positive protection for only pennies a tree

Water-Soluble Double Sulphate of Potash-Magnesia
($K_2SO_4 \cdot 2MgSO_4$) 22% K_2O – 18% MgO

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

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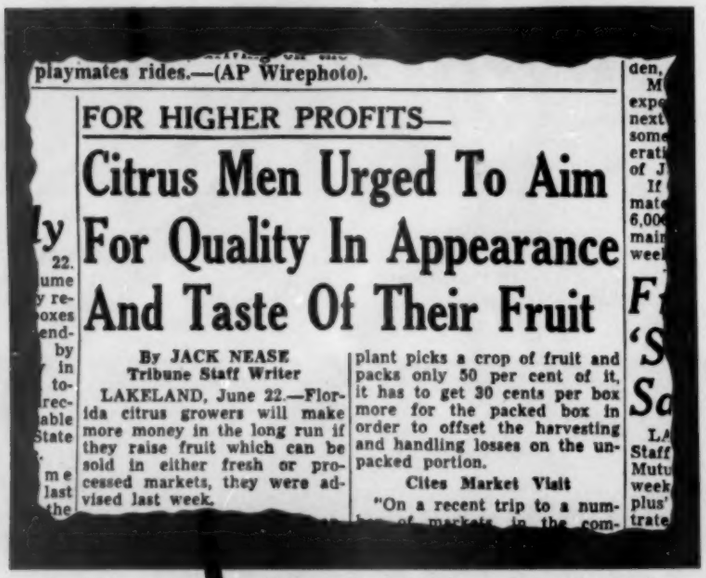

playmates rides.—(AP Wirephoto).

FOR HIGHER PROFITS—

Citrus Men Urged To Aim For Quality In Appearance And Taste Of Their Fruit

By JACK NEASE
Tribune Staff Writer

LAKELAND, June 22.—Florida citrus growers will make more money in the long run if they raise fruit which can be sold in either fresh or processed markets, they were advised last week.

plant picks a crop of fruit and packs only 50 per cent of it, it has to get 30 cents per box more for the packed box in order to offset the harvesting and handling losses on the unpacked portion.

Cites Market Visit

"On a recent trip to a num-

(Tampa Sunday Tribune, June 23, 1957)

According to most current thinking, future profits will depend on both external and internal quality of your fruit. It makes good sense, too, because eye-appeal has proven necessary for maximum price on the fresh fruit market, and new buying habits of both processors and the fresh fruit market are keyed to internal quality.

Naturally, top-quality fruit depends on proper fertilizing with the finest you can buy, spraying with the most dependable pesticides you can obtain and taking advantage of the latest, proven scientific advances in cultural practice.

Since 1893, *Ideal* Fertilizers have been considered the finest, because they have always contained nitrogen from high-grade sources such as Peruvian Guano. FASCO Pesticides have always meant *dependable* control. Your W&T Representative keeps up with the latest, proven cultural practices, so give him a call today. He's at your service to help you travel up the new highway to higher profits.

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FLORIDA AGRICULTURAL SUPPLY COMPANY

WILSON & TOOMER FERTILIZER COMPANY
Plants in Jacksonville, Tampa, Cottondale, Port Everglades
GENERAL OFFICES • JACKSONVILLE, FLORIDA

Citrus Promotion Paying Off

YEARS OF FAITHFUL PROMOTION on the theme that "citrus juices build resistance to cold and flu," a long-time message of the Florida Citrus Commission, is paying off this season for growers in the form of increased sales of orange and grapefruit juice.

Nobody claims that a can—or 10 cans—of citrus juice will cure the Asiatic flu. But there apparently are millions of consumers, plus a lot of doctors, who think that drinking an abundance of juice will help deter the flu bug and its effects.

Sales of orange and grapefruit juice soared in October and November, and the obvious reason was the flu and cold epidemic. The heavy sales were welcome in the citrus industry, for there was a larger-than-normal carryover of single strength juice on hand as the 1957-58 harvesting season opened.

The demand also was felt by frozen orange juice concentrators. And there were indications that chilled juice and fresh orange sales were favorably affected.

Sometime ago, through its advertising and publicity agencies, the Citrus Commission made plans for a special flu campaign. About $75,000 was set up in an advertising fund, with the idea of hitting major markets with newspaper, radio and TV ads when flu was at epidemic proportions. Several of these metropolitan promotions have been completed with satisfying results.

One newspaper ad has a headline saying "To Fight Colds and Flu—Doctors Suggest Extra Quantities of Orange Juice or Grapefruit Juice." Smaller copy speaks of "Vital Vitamin C," "Essential Minerals," and "Quick Energy."

Commission representatives believe the spurt in juice sales this fall can be attributed in large measure to continuous attention to the citrus health story over the years, which has been accepted by the public and by the medical profession.

Just about everybody is on the citrus juice bandwagon. One aspirin company even is advertising that citrus juice should be used with its product as a help in fighting flu. Pictures of oranges, grapefruit and aspirin cominate the ad.

It can truthfully be reported that citrus men are sorry that Asiatic flu is spreading over the United States. However, it's an ill wind that blows nobody good, and they feel that increased citrus sales will help both the flu sufferers and the growers of oranges and grapefruit.

* * *

Most people do what they are requested to do; successful people do a little more.

Superior **CITRUS TREES**

AVAILABLE NOW—Prime quality trees grown to exacting standards on nematode-free virgin land. Prices start at $1.25.

Hamlin, Pineapple, Valencia, Orlando, Temple, Red Grapefruit, Persian Lime.

SPECIAL—Limited quantities of SPB Certified Psorosis-free trees on rough lemon. Parent stock tested for 5 years by Plant Board. List of available varieties sent on request. Also will bud on order for delivery next Fall.

DON'T TAKE CHANCES—Guard your grove's future. Be sure the trees you buy are the best. A nickel saved on a poor tree is no bargain. We invite your inspection of our trees **before** you buy. Our guarantee protects you.

FREE Our consultation service is available without obligation. We shall be glad to inspect your site and make recommendations. Just call GLendale 2-7541 or write

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WHERE CREATIVE CHEMISTRY WORKS WONDERS FOR YOU

The Use of Flatwood Soils for Citrus Production

By DR. JOHN W. SITES
Head, Department of Fruit Crops
University of Florida

GOOD PLANTING SITES for citrus are becoming more and more difficult to find in Florida.

And no wonder! Within the past 25 years, citrus acreage has been doubled; citrus production, more than quadrupled. In 1955-56, Florida had some 522,700 acres of bearing groves.

Yet, the end is not in sight. The Florida Livestock and Reporting Service estimates that by 1960, the total bearing grove acreage will be approximately 617,000 acres.

Admittedly, this expanding situation has been beneficial to the economy of the individuals involved and to the general economy of the state. On the other hand, it has resulted in stimulating the planting of additional acreage to the extent that desirable planting sites are no longer available.

Experience and training has taught us that citrus may be grown most satisfactorily on sites which offer good cold protection and where soil drainage is adequate. Generally speaking, these sites have been limited pretty largely to what has been classified as "high pineland" or scrub oak knolls.

However, with a decrease in availability of warm well-drained planting sites for citrus, the advisability of using other types of land is becoming increasingly important.

Other Soils

Persons familiar with citrus in Florida realize that "high pineland" soils are not the only soils presently planted to cirtus. "Flatwoods" and "Hammock" soils have been planted—to a more limited extent and with varying degrees of success—throughout the citrus belt.

Recently, considerable interest has centered around the use of "flatwoods" soils as a possible panacea to alleviate the shortage of good planting sites which is now being experienced. It is well that we should look at this possibility rather critically—with a realistic appraisal of the problems and limitations involved, and with our judgment not being influenced too greatly by the enthusiasm of the moment.

A classification of soils in Florida's lower peninsula, based largely upon soil drainage, is shown on the map on this page. This classification was prepared by Ralph Leighty, of the University of Florida's Department of Soils.

Flatwoods Predominate

It is apparent from looking at this map that the so-called "flatwoods" soils make up a large percentage of Florida's peninsular soil mass. These areas are not designated on the map as "flatwoods," "hammock," etc.; although these designations are fairly descriptive to Floridians and denote certain patterns of vegetation, drainage and moisture conditions present, they do not give a very precise indication—per se— of the soil type or series. In the classification given on the soil map, the drainage becomes increasingly poorer with the increased amount of shading in the patterns.

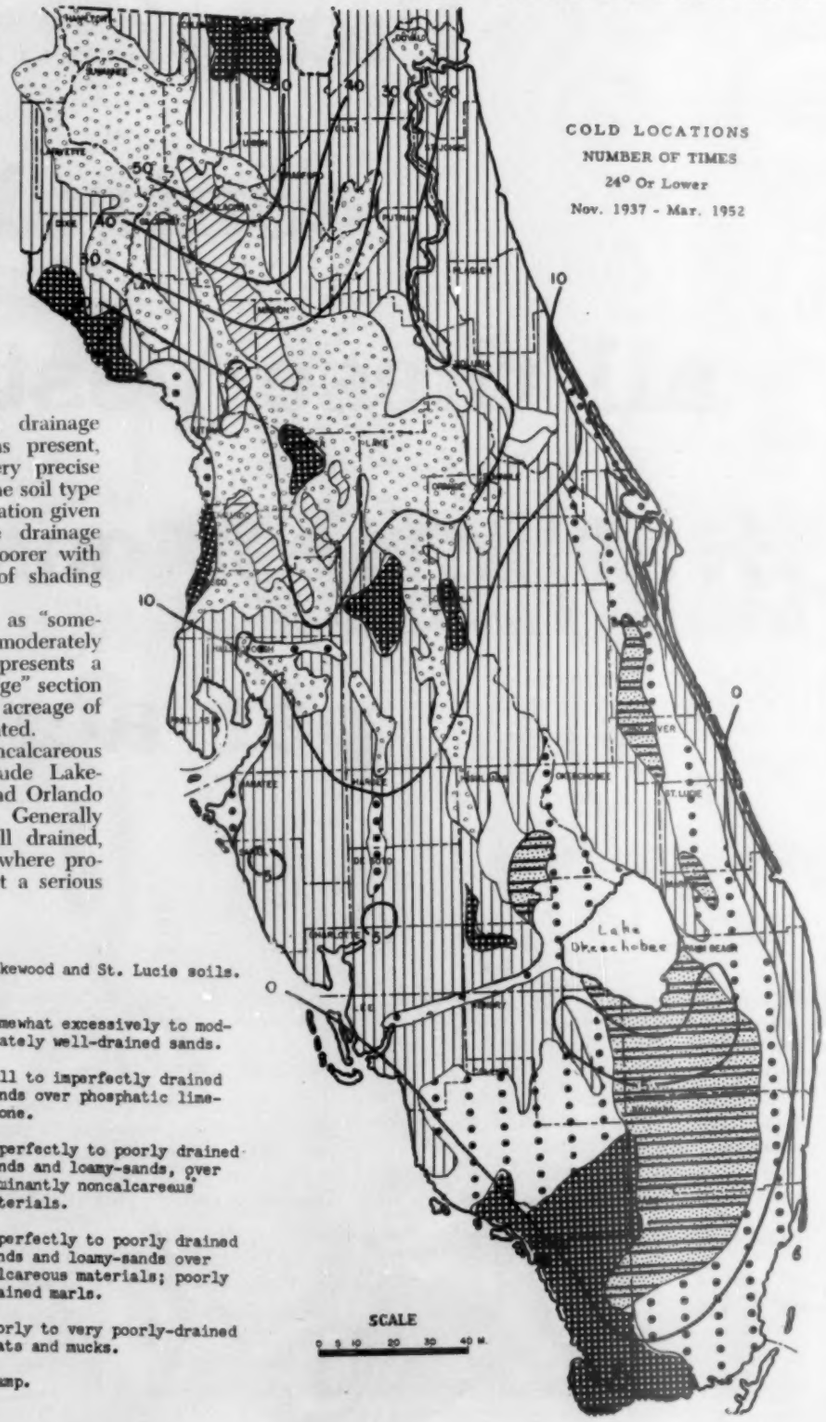
The area designated as "somewhat excessively to moderately well-drained sands" represents a large portion of the "ridge" section upon which the largest acreage of citrus is presently planted.

Derived from noncalcareous sands, these soils include Lakeland, Blanton, Eustis and Orlando as the major soil types. Generally speaking, they are well drained, and suitable for citrus where protection from cold is not a serious factor.

The two large areas which may be classified as "flatwoods" soils are designated on the map as "imperfectly to poorly drained sands and loamy sands over predominantly noncalcareous materials" (vertical lines) and "imperfectly to poorly drained sands and loamy-sands over predominantly calcareous materials" (white field with large black dots).

Noncalcareous sands include Leon, Immokalee, St. Johns, Scranton and Ona sands as imperfectly drained; Plummer and Rutlege sands as poorly drained; Bladen, Coxville, Bayboro, Rains and Portsmouth sands and loamy-sands as poorly drained.

When these sands are laid down over calcareous materials and are


COLD LOCATIONS
NUMBER OF TIMES
24° Or Lower
Nov. 1937 - Mar. 1952
Lake Okeechobee
Lakewood and St. Lucie soils.
Somewhat excessively to moderately well-drained sands.
Well to imperfectly drained sands over phosphatic limestone.
Imperfectly to poorly drained sands and loamy-sands, over dominantly noncalcareous materials.
Imperfectly to poorly drained sands and loamy-sands over calcareous materials; poorly drained marls.
Poorly to very poorly-drained peats and mucks.
Swamp.
SCALE
0 5 10 20 30 40 M.

imperfectly drained, they are classified as Adamsville, Bradenton, Ruskin, Sunniland, Keri, Parkwood, Matman, Copeland, LaBelle and Broward sands and loamy-sands. The poorly drained soils in this group include Pompano, Felda, Charlotte, Arzell, DelRay, Manatee and Meggett sands, loamy-sands and sandy loams.

Organic Hardpan

Besides poor drainage, an organic hardpan—or somewhat impervious calcareous or clay layer—is associated with many of these soils. The Leon, Immokalee and Ona soils are all strongly acid in reaction, and have organic hardpans.

In the Leon series, the organic layer may be found as close as 18 inches to the surface; but it may be as deep as two to two and one-half feet. Firm but friable when moist, this layer may be very hard when dry. The organic pan in the Immokalee soils is usually deeper (30 to 36 inches from the surface) and less firmly cemented.

The Scranton and Ona series are more widely used at present for cultivated crops. The Ona soils have a very weakly cemented organic layer rather close to the surface (8 to 14 inches).

All of these soils would require drainage before their use for citrus should be contemplated.

Plummer and Rutlege series also consist of strongly acid sands, and with generally poorer natural drainage than the above. Although these soils are widely distributed and represent a large total acreage, they have been unimportant agriculturally because of distinctly poorer drainage.

Marl or Limestone

Differing from the "flatwoods" soils previously discussed in that they represent deposits of sand over marl or limestone are the Adamsville, Parkwood, Keri, Sunniland and Bradenton series.

Whereas the "flatwoods" soils previously described are acid to strongly acid in reaction, the last-named series are only mildly acid to alkaline. Mostly they are somewhat poorly drained, and may have layers of sandy clay or marl at distances varying from 1½ to 4 feet from the surface. All of these soils would require drainage before their use for citrus would be satisfactory.

Belonging to this latter group also are the Pompano, Felda, Charlotte and Manatee series which – generally speaking – are more poorly drained than the Adamsville, Parkwood, Keri, etc., series.

Soils briefly described above vary with respect to their distribution and total area. Some are important locally to agriculture, but all are limited in their usefulness because of improper drainage.

Limiting Factors

Listed below are the more important factors which we must consider in evaluation of any potential citrus planting site. While many other factors are also worthy of consideration, the first three are of major importance:

1. *Air drainage* (cold protection).
2. *Soil drainage* (depth of rooting zone).
3. *Water availability* (irrigation water).
4. *Soil fertility.*
5. *Accessibility* (Roads, markets, etc.).

How does this "flatwoods" land compare—with respect to cold protection—with the present land areas now planted to citrus?

Warren O. Johnson of the Federal-State Frost Warning Service has provided a series of curves (see map) which show the number of times when the temperature fell to 24°F. and below during the period between November 1937 and March 1952.

It will be noted (by following the temperature curves on the map) that most of the citrus in the state is limited to the area south of the curve denoting a temperature of 24°F. for 30 times or more over the 15-year period. Although citrus is grown to some extent in Alachua County (where 24°F. occurred 40-50 times), the combined area is small and plantings are usually associated with inland lakes in the area.

A characteristic of these curves is that they extend further north along the east coast than along the west, and dip much further south in the interior of the state. This emphasizes the tempering of the Atlantic Ocean and the Gulf of Mexico.

Some of the flatwoods soils in the northern counties along the east coast—St. Johns, Flagler, Volusia and Seminole—thus are in the same zone as much of Polk and Osceola counties. And they apparently are warmer than some of the better drained soils in Pasco, Hernando, Citrus and Levy counties along the west coast.

The figures also show that large areas of our better drained (soil moisture) soils in Lake, Sumter, Marion and Levy counties lie in an area of high frequency of 24°F. or lower. Two much smaller, comparatively colder, areas are also evident in Palm Beach and Hendry counties.

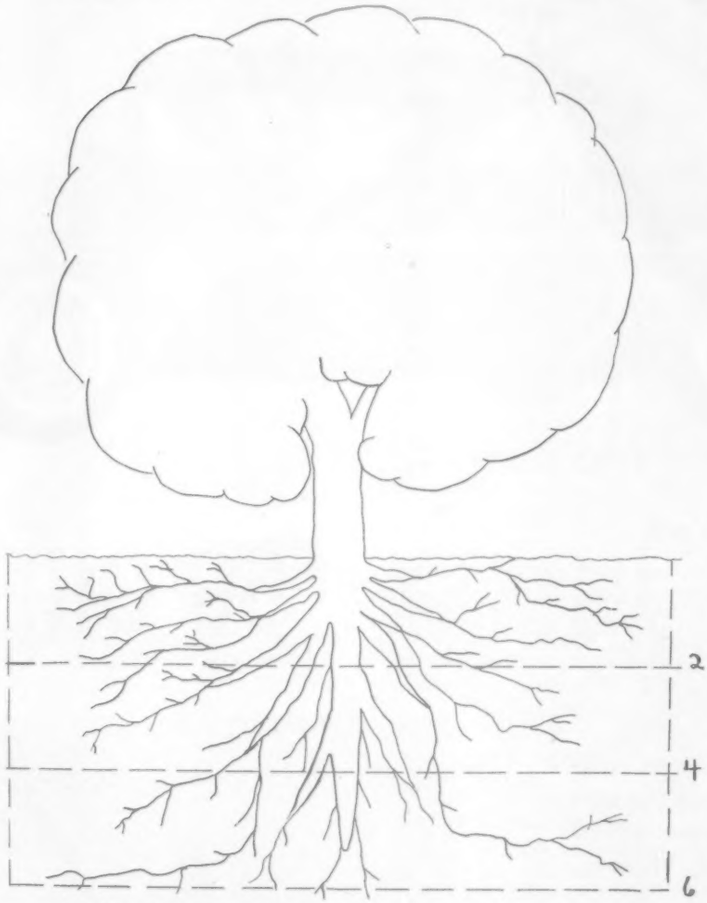
Certain facts must be borne in mind in interpreting the significance of the curves on the map:

First: Since much of the "flatwoods" land has not been used for intensive agricultural production, there is much less weather data available for this land. Consequently, generalizations such as are made here are much more subject to error.

Secondly: Since these soils are low, they are subject to catching large masses of cold air—which may result in temperatures much below the 24°F. indicated on the map.

Because of these circumstances, whenever an attempt is made to plant citrus on flatwoods soils, be certain to use any possible advantage in elevation which may be present. Elevation differences of as little as five feet may result in a very marked benefit in cold protection and soil drainage.

Always attempt to get previous temperature records for the *exact* site being considered. Don't be satisfied with a report on similar land which may *look* the same.



SCHEMATIC DRAWING of the root zone of a citrus tree.

High Water Table

The point has already been made that all of these soils will very likely require soil drainage if they are to become a satisfactory rooting medium for citrus trees. A high water table is associated with these soils; under natural conditions, a high water table is characteristic.

Where high water tables are allowed to persist, the rooting zone of citrus is limited to the soil area above the water table where sufficient oxygen is present for the roots to carry on their metabolic processes.

An important consideration here—and one which is frequently overlooked—is that it is the *depth of rooting* which determines the amount of water which will be available to the plant during periods of drought. In other words, and however paradoxical this may sound:

The better these soils are drained during wet weather, the less will be the need for irrigation during dry weather.

Citrus trees, like most plants, are very inefficient in their use of soil water. For example: If we assume an average yearly temperature of 65°F., then an average bearing citrus tree will take up through its roots and loose into the atmosphere by transpiration and evaporation something approximating 45 tons of water per year.

Naturally, this tremendous water consumption must be provided for. The most practical way is to create a soil condition which will permit the largest possible storage of "available moisture."

"Available moisture" is moisture which the tree can use. "Available moisture" lies between the extremes of (a) moisture held so tightly by the soil that the tree cannot obtain it and (b) moisture which is so freely abundant that the roots are suffocated.

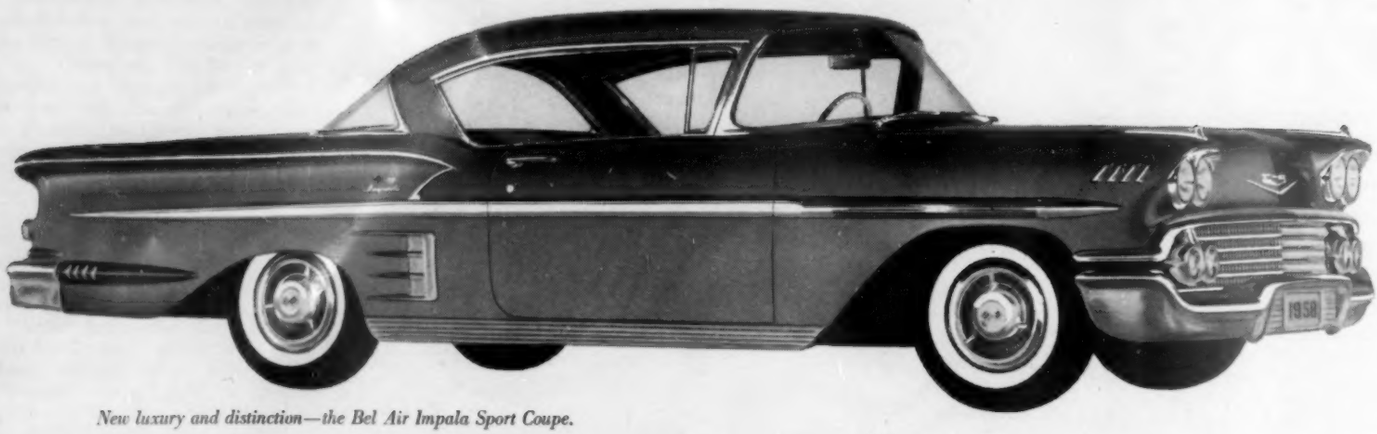
Soil Drainage

Soil drainage is the most practical way to obtain this condition. There are many problems associated with soil drainage which cannot be discussed here.

However it must be possible to physically drain the land, preferably so that the water table can be lowered to about four to five feet below the ground surface. Where the water table rises much above this, and where provision is not made to remove peak fluctuations above three feet within a week or less, an unsatisfactory grove condition is rather certain to result.

"Water control" is most aptly

(Continued on Page 31)



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Short, Smooth Silage Deters Spoilage

THE NUTRITIVE VALUE of good silage has been proven many times. Then why don't Florida ranchers and farmers make and use more silage?

For one thing, Florida's warm climate presents a problem in feeding out silage; a problem not found in many other states.

When the climate is cold, the silo can be opened for lengthy periods without fear of spoilage. But when a Florida cattleman fails to feed silage for two days, he can count on trimming back spoiled surface—especially if the silage is loose, due to the method of handling.

One of the major deterrents to this practice in Florida has been the laborious methods of removing the packed silage from the silo.

"The machinery satisfactory for feeding silage from horizontal silos is expensive; it is not yet economical for the small operator utilizing 200 tons or less each season," points out Elwyn S. Holmes, assistant agricultural engineer at the University of Florida.

Many ranchers and farmers have told Holmes that they would make more use of silage if they knew of an easy method of feeding it. As a result, the engineer last winter, made a detailed study of feeding out operations.

HAND FORK is the most laborious, therefore the most expensive, way of removing silage.

Field Study

Included in the study were the operations from 13 horizontal-type silos, ranging in capacity from 100 to 5,219 tons. Spoilage was measured from an additional 11 silos. The equipment for removing the silage varied from a commercial ensilage unloader to a hand fork.

Four operators removed the silage with a commercial ensilage unloader. These units left a smooth surface on the face of the silage—which held spoilage to a minimum if the cattlemen stopped feeding operations for a period.

Two operators used hand forks for removing the silage. In these cases, the face of the silage was left relatively smooth.

Use of a clamshell-type loader and tractor-fork left a very loose and rough face in the silage. The use of any of this equipment speeded up the operation over the hand fork. The use of a dump truck and self-unloading wagon accelerated the spreading into bunkers.

Basis of Comparison

In order to assign a fair value to the feeding out study, each silo was treated as if it contained 400 tons and the cost of silage handling equipment valued accordingly. The machinery handled only 2.86 tons daily in all operations. The least expensive feedout operation was the lift fork, which cost $1.90 daily. (Labor definitely should be considered in a decision to buy equipment.)

Amount of spoilage found in 20 horizontal silos at the time of feeding out was also analyzed. Only the silage that was non-edible prior to removal from the silo was counted as spoilage. In all silos, there was a direct relationship between the amount of silage surface exposed to air and the amount of spoilage.

Because the top and all sides were exposed to the air, spoilage was highest in stack silos, woven fence bunkers, and wooden bunkers with air cracks between boards.

Twin Silos

A good comparison of some of the factors affecting spoilage was found in two treated-timber bunker silos on the same ranch. Both silos were filled with coastal bermuda.

Forage in the first silo, cut by the forage harvester, was between two and three inches long.

However in the second silo, the length of cut averaged three-fourths of an inch. The second silo had a plastic cover, plus about one inch of dirt thrown over the plastic; it was also about two feet wider than the first silo.

Final figures on this comparison test were astounding: The first silo has 30.1% spoilage; the second, 1%.

The six sand-bank bunker silos analyzed were more uniform in the amount of spoilage than that in any other type. In this group, a minimum spoilage of 20% was found in the silo having the maximum air-exposed surface of 10 square feet per ton of silage. The minimum spoilage of 10.5% was found in the silo having a minimum air-exposed surface of 4.5 square feet per ton of silage.

Major Factors

Holmes reports that the following factors seemed to have an effect on the quality of the silage and its percent spoilage:

Method of packing green forage in the silo: It was found that spoilage was minimized when the packing tractor was operated continuously when the silo was being filled and for a short interval each day for a minimum of three days after filling.

Length of cut: When the length of cut averaged three-fourths of an inch, the material seemed to pack into the silo quite satisfactorily. Longer length seemed to be springy or spongy.

Moisture content: Too-dry forage may cause insilage to mold or discolor.

Other factors were: preservative, cover for silage, forage material being made into silage, surface contact to air, silage depth, and rate of filling silo.

ROUGH SURFACE—which is conducive to spoilage—is left by the clamshell type unloader (above).

LEAST EXPENSIVE, in that it takes less labor and time, is the lift fork unloader (right).

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Control of Insects Attacking Vegetable Crops in Florida: II

Protecting Crucifers and Leafy Vegetables

By J. E. BROGDON, J. W. WILSON *and* DALE M. NORRIS, JR.*

VEGETABLE GROWING is big business in Florida. And, the control of insects attacking vegetable crops often means the difference between profit and loss.

During the 1955-56 season, for example, just one phase of the fresh produce industry—crucifers and certain leafy vegetables—had a total value of approximately $11,044,000. Breaking this sum down, we see that:

Cabbage planted for harvest was reported to be 16,700 acres valued at $5,810,000; cauliflower, 1,200 acres at $638,000; endive (escarole), 4,800 acres at $2,822,000; lettuce and romaine, 4,300 acres at $1,774,000. The home garden value of these crops is in addition to the commercial production.

Several different kinds of insects attack these crops in Florida. Some of the pests occur in such large numbers that the entire crop may be rendered unmarketable if control measures are not used.

However . . . the vegetable grower can usually place his crop on the market *free of insects and insect damage* by using the best insecticides correctly at the proper time.

There are several insects that attack many different crops. Included in this category are aphids, cutworms, wireworms, and mole-crickets; these may feed on all of the vegetables discussed in this article.

Aphids, often called "plant lice," are soft-bodied insects with piercing-sucking mouthparts with which they suck sap from plants. They average about the size of a pin head, and can reproduce very rapidly. While there are many species of aphids, the principal ones attacking these crops are the green peach aphid, the cabbage aphid, and the turnip aphid.

Several species of **cutworms**—the caterpillar or larval stage of moths—damage plants. Cutworms rest in the soil during the day, while the adults hide in protected places among the plants. Both become active at night. In many instances, cutworms are present in the soil when the crop is planted and they immediately begin feeding upon transplants or young germinating seedlings.

The **wireworm** is the immature or larval stage of a hard, brownish bettle known as a "click beetle." Hard, slick, yellowish-brown pests, they range in length from one-half to one and one-half inches. They remain in the soil and feed on the roots and stems of plants.

Four species of **mole-crickets** have been found in Florida. Their presence is evident by the burrows they make just below the soil surface.

Although the adult and young mole-crickets spend most of their life in the soil, they will come to the soil surface. Adults often fly, and at certain seasons of the year are attracted to lights. Mole-crickets are active at night and on very cloudy days; but generally they remain in the soil during the day.

Mole-crickets have well developed front legs adapted for digging. They cause damage primarily by uprooting young seedlings, thus causing the roots and upper soil surface to dry out.

However they also feed upon plants, often chewing off the stems at the soil surface and pulling the plants down into their burrows. Mole-crickets are especially destructive to seedbeds and fields which are newly seeded.

Other Important Insects

Certain general insect feeders that are pests of crucifers have been covered. Now let us discuss other important insects that attack those crops and are more specifically associated with them.

Several of the major ones are caterpillars and include armyworms, the cabbage looper, imported cabbageworm, diamondback moth, and the cabbage webworm. Pests of lesser importance include cucumber beetles, flea beetles, leaf miners, stink bugs, and several others.

Probably the most important armyworm attacking crucifers in Florida is the **fall armyworm.** The adult is a moth that is active at night and not generally seen during the day. Each female lays approximately 1,000 eggs—which explains how they can become so numerous in a short period of time.

Armyworms, which may grow to one and one-half inches in length, vary in color from light brown or green to almost black; they have three yellowish-white hair lines down the back from head to tail. There is a dark stripe, followed below by a wavy yellow one splotched with red, on each side of the caterpillar.

Serious losses are often caused by these pests moving in from adjoining fields, where they may build up in large numbers unnoticed.

The **cabbage looper** can be readily detected in cabbage plantings. This pale green caterpillar, which has a narrow white stripe along each side of the body and two others along the middle line of the back, may reach one and one-fourth inches in length. Their characteristic looping movement results from three pairs of slender legs near the head and three pairs of thick prolegs near the rear end.

Cabbage looper adults or moths are active only at night, grayish-brown in color, about one inch long, and have a wingspread of nearly one and one-half inches. They have mottled brownish front wings with a small silvery spot—that resembles the figure "8"—near the middle of each wing.

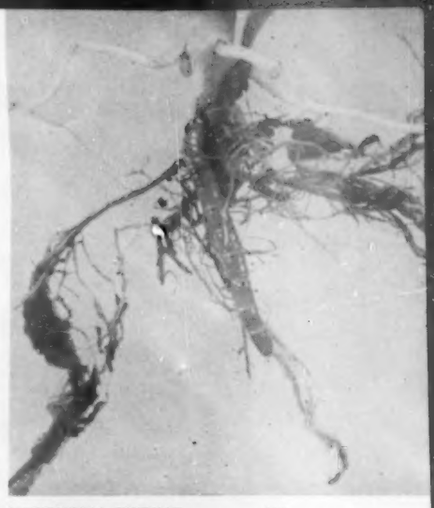
The **diamondback moth** is a small grayish insect about one-third of an inch long with folded wings. The name comes from the fact that in the male, the wings form a row of three diamond-shaped yellow spots where they meet down the middle of the back. The hind wings have a fringe of long hairs.

Full-grown caterpillars of this species are pale yellowish-green, and rarely exceed one-third of an inch in length. When disturbed they may wriggle around or drop on a silken thread. Their feeding gives a shot-hole appearance. Quite often they do not feed all the way through the leaf, but leave a thin portion of it intact.

The adult **imported cabbageworm** is a white butterfly with two or three black spots on the wings. The greenish caterpillars, which have a velvety appearance, have an orange stripe down the middle of the back and another broken stripe along each side of the body. They feed on the underside of leaves, and leave greenish to brown pellets of excrement scattered in the plants.

The **cabbage webworm** adult is a small gray moth with mottled black, white and brownish yellow forewings. The full grown caterpillars, which are slightly over one-half inch in length and dull yellowish-gray in color, cover themselves

(Continued on Page 22)

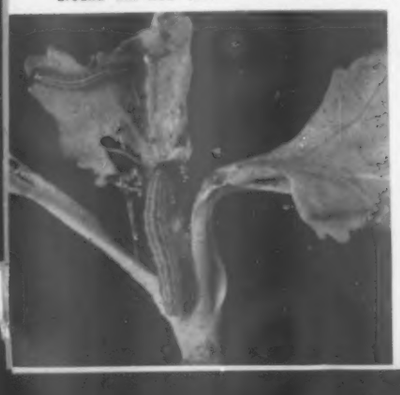


WIREWORM FEEDING on corn. Wireworms attack crucifers in a similar manner. (Photo about 1½ times natural size.)

SUPERVISED SPRAYING of cabbage (above) and other vegetables is important to insure proper application which includes having the sprayer in good repair, proper placement, and adjustment of nozzles to give good coverage.

(Mr. Brogdon is Florida Agricultural Extension entomologist; Dr. Wilson, entomologist at the Central Florida Experiment Station, Sanford; and Dr. Norris, assistant entomologist at the Potato Investigations Laboratory, Hastings.)

CABBAGE WEBWORM feeding upon young cabbage plant. Note injury concentrated around the bud (about twice natural size).



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Water - - -

Too Much or Too Little

By L. A. JACOBSEN
Area Conservationist
Soil Conservation Service
Stuart, Florida

"IT NEVER rains but it pours." Bromidic the above saying may be; true it definitely is—especially for farmers, growers and ranchers in Southern Florida. Helping these men solve their problems of too much or too little water are everyday occurrences for technicians of the U. S. Soil Conservation Service.

Control of water is a "must" in this section where a major portion of the winter vegetables for our country are produced. Beef, sugar cane and citrus are other agricultural commodities of importance.

In Southern Florida, as well as to a degree in other parts of the state, two principal factors contribute to creating water problems: the rainfall pattern and the general flat topography with little or no stream valley development.

Contributing Factors

Varying from a low of 31 to a high of 82 inches, the average annual rainfall approximates 52 inches per year. Some months experience less than an inch of rainfall. Yet, it is not too unusual to have one-half of the yearly average rainfall occur in a month. Rains accompanying hurricanes sometimes dump 15 inches of water in a 48 hour period.

The topography is generally flat, varying from sea level to 60 feet over most of the area. Few streams are present; as a result, artificial drainage is generally relied upon for the disposal of excess water.

Since the water table is high over most of the area a greater portion of the time, the storage capacity of the soils is limited. With a water table three feet below the surface, a four-inch rainfall will often flood the flatter lands.

As a rule, the winter crop season coincides with the drier months. Consequently irrigation is almost universal on cropland, and pasture irrigation is becoming more prevalent.

The safe disposal of excess water is accomplished by the use of the following:

Diking and pumping, trapezoidal, "V" and "W" types of ditches, land leveling or smoothing, and water control structures.

Seepage Irrigation

To prevent the waste of water, provisions are made to remove only the excess amount that normally would damage crops. The remainder is stored in the soil or held behind water control structures in canals, ponds, and streams.

Irrigation water for use in dry periods is obtained from streams, lakes, wells, and canals. The principal method of irrigation employed is that of water table control. Called "seepage irrigation," this method depends upon the presence of a normal highwater table in association with permeable soils and the procurement of an adequate water supply.

Seepage irrigation is accomplished by raising the water table beneath the surface of the land to a point where capillary action will wet the surface or root zone. Irrigation water for this purpose is conveyed in ditches and mole or tile drains, spaced from six to 200 feet apart, and thus introduced into the soil. This type system is employed principally for irrigating truck crops, pasture, citrus, and flower crops.

Because of the more uniform distribution of irrigation water and the elimination of depressions where crop drowning or water damage would normally occur, truck farmers are becoming more convinced that the high cost of land leveling is justified. Requests from farmers for land leveling designs have increased tremendously in recent months.

Sprinkler Systems

Employed to a lesser extent is sprinkler irrigation. Rotating, overhead, under-tree, and hydraulic sprinklers are used, as well as perforated pipe.

Citrus is the principal crop irrigated by the sprinkler method. Some growers prefer to use it rather than seepage irrigation as the latter method restricts the depth to which citrus roots will grow.

Cover Crops

Vegetative measures are not overlooked as a means of helping to solve the problems of too much or too little water. Cover crops of hairy indigo, Sesbania, and Crotalaria beggarweed are used extensively in citrus groves and on cropland.

The incorporation of the organic matter produced in the soil or its use as a mulch adds to the water-holding capacity. The growing season for these cover crops generally coincides with the rainy season.

In addition, cover crops often assist in disposing of excess water through evapo-transpiration. Sesbania, for example, grows very well in a few inches of water after making its initial growth.

Perennial grasses and legumes, shrubs, and trees are used to prevent erosion along canals that convoy irrigation and drainage waters. Corn, sunflower, and other tall-growing plants are planted in rows on truck lands to prevent crop windburn and wind erosion.

Attracts Wildlife

When properly applied and maintained, these soil and water conservation practices contribute to the increase and conservation of wildlife populations. Bass and bluegill thrive in the irrigation and drainage canals as well as in ponds, streams and lakes.

Most pond birds, ducks and other waterfowl seem to prefer to use ponds on improved areas rather than bodies of water on undeveloped lands. Increased fertility of pond waters, the maintenance of adequate water levels, and the production of additional food and cover are contributing factors.

Quail and songbirds find food and cover on cropland, groves and pastures. Quail eat the seed of many of the cover crops, including Sesbania, beggarweed and hairy indigo.

Soil Conservation Districts in Southern Florida are cooperating with the Soil Conservation Service, the Central & Southern Florida Flood Control District, many individual drainage districts, watershed associations, other agencies, committees and groups in solving the problems inherent in too much or too little water.

The vagaries of the weather and the ever-present danger of attack by insects and diseases are hazards farmers accept philosophically. The application of planned soil and water conservation practices to the land contribute to the farmer's ease of mind.

Besides improving the land, these practices increase production and profits.

TOO MUCH WATER (left) is a perennial problem to many Southern Florida ranchers. However the G. E. Smith Dairy of Fellsmere has a "just right" water control program: Its combination system (right) is equipped to drain excess water and provide irrigation water when needed.

To set a bigger crop you need

BOTH BARRELS!

The double-barreled action of Norwegian Calcium Nitrate can increase citrus yields substantially . . . helps by providing both water-soluble *calcium* and *nitrate nitrogen*. The calcium helps improve soil structure and water penetration to the root zone. The nitrate nitrogen is therefore immediately available to the tree without conversion loss or evaporation waste. And Norwegian Calcium Nitrate leaves no harmful residue in the soil.

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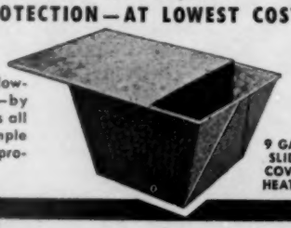

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Pine Mice Can Severely Injure Winter-Banked Citrus Seedlings

GIRDLING of winter-banked young citrus seedlings by pine mice can, in some cases, cause the death of the seedlings. For this reason, Jack T. McCown, Extension Service assistant citriculturist, advises growers to keep on the lookout for these rodents when banking their young trees for cold protection.

The first pine mice infestation appeared near McIntosh last year. This year they have again been found damaging seedlings in that area.

Presence of the pine mice was discovered when a grower noticed numerous banked trees throughout his grove turning yellow. Upon removal of the bank for the seedlings, girdling was noticed just above the ground level as depicted in the above photo.

The pine mouse belongs to the short-tail group of mice. Several litters may be produced each year, with two to four mice per litter.

A burrowing animal, the pine mouse lives and feeds mostly under ground. While it may be active throughout the year, it is possibly less evident during dry, hot weather.

It is thought that these pine mice became prevalent and did considerable damage principally because the trees were banked for an excessive length of time. The presence of these banks for a long period of time provides the mouse the protection it seeks, as does the grass grown on and around the banks.

Growers, in areas where banking of young trees is necessary over quite a long period for cold protection, should remember that these trees should be unbanked as soon as the danger of frost has passed. Leaving these banks for a longer period than necessary will tend to encourage infestation of pine mice.

Some shrews were also found in the grove with the pine mice. It is thought that the shrew feeds primarily on insects. One interesting note concerning the shrew is that it is a ferocious animal for its size; it likes to fight and will attack animals many times its size . . . and is usually the winner.

U. S. Fish and Wildlife workers believe that the shrews help kill off pine mice.

An experimental bait which has been used on the pine mice consists of zinc sulphide mixed with small pieces of sweet potato and apple. Pieces of this bait has been placed in the mice burrows, approximately two and one-half to three feet from the base of the trunk. The amount of control this bait has on the pine mice has not been determined.

Mutilated or partially girdled trees healed successfully when painted with a bordaux paste which eliminates fungus infection.

* * *

There was a time when a fool and his money were soon parted. Now it happens to *everybody*.

* * *

First Annual

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FOR THE STATE CHAMPIONSHIP

For FFA and 4-H Boys & Girls

January 11th, 1958 at 8:00 P.M.

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11th - 30th	PRIZES	$3.00 each

WHO CAN ENTER? — Contest open to Florida boys or girls not over 18 years of age attending school.

Boys and girls wishing to enter a FROG in the contest may obtain application blank and rules by filling in the coupon below and returning it to the address indicated.

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Please send to me free application blank and rules for the Florida Jumping Frog Contest to be held in conjunction with the Hillsborough County Junior Agricultural Fair, Plant City.

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How to control white mold, bottom rot, pink rot, watery rot, (sclerotiniose)

Aero® Cyanamid protects beans, tomatoes, potatoes, celery, cabbage. It's tested, proven... supplies nitrogen, too.

Absolutely nothing can clean up sclerotiniose once it has attacked your crops. But you *can help prevent* it! Simply disc 750 to 1000 pounds of Aero Cyanamid into the top 4 to 6 inches of soil about a month (thirty days) before planting. Disc it in thoroughly. For best results, all old plant growth should be cut up by discing.

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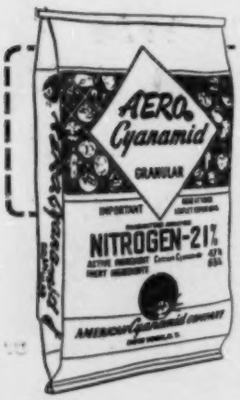

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NEWLY-ELECTED PRESIDENT, Dr. A. F. Camp of Lake Alfred (center) discusses Florida State Horticultural Society plans with reelected officers R. R. Reed of Tampa (left), treasurer, and Dr. Ernest L. Spencer, Bradenton, secretary.

Horticultural Society Names Dr. Camp As New President

FLORIDA's oldest and largest agricultural group, the Florida State Horticultural Society, elected Dr. A. F. Camp of Lake Alfred as president during its 70th Annual Meeting.

Other officers of the Society's executive committee, reelected during the late October convention in Miami, were: Dr. Ernest L. Spencer, Bradenton, secretary; R. R. Reed, Tampa, treasurer; Ralph P. Thompson, Winter Haven, publications secretary, and W. L. Tait, Winter Haven, editing secretary.

Vice-presidents named to head the various divisions of the Society were:

Cliff Sutton of Orlando, citrus; John Causey, West Palm Beach, vegetable; Seymour Goldweber, South Miami, Krome Memorial; S. A. Rose, Gainesville, ornamental, and Dr. R. A. Dennison of Gainesville, processing section.

When the Society was organized 70 years ago, the total value of farm products was recorded at $12,086,330. The 1955-56 total was $700,236,000, reported outgoing president R. E. Norris of Tavares.

Cotton and cottonseed accounted for over half of the state's agricultural income in 1888; horticultural crops were in their infancy. In 1955-56, horticultural crops accounted for well over two-thirds of the state's agricultural income.

A review of Society history revealed how science and education—plus an inspired group of individuals—pitted together their resources, talent, brawn and wealth to overcome many of the problems of plant nutrition as well as insect and disease control.

Papers Presented

Some 100 papers, covering all pertinent phases of Florida agriculture, were presented during the three-day convention. Many papers were given on experimental work underway on new products in the industry.

One panel discussion concerned gibberellings. This product is still in the experimental stages and is not yet recommended for commercial crops.

Insect resistance to insecticides is an established fact, declared Dr. E. G. Kelsheimer in a paper. However before accepting the failure of certain materials to control an insect, it is necessary to evaluate

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certain factors that contribute to poor control.

Some factors listed by the scientist as having an effect upon good insect control were: proper formulations, timeliness, compatibility, and thoroughness of application. These practices should be properly complied with before declaring that any given insecticide is no longer effective as a control.

A paper by R. E. Norris and Paul F. Smith, respectively of the Extension Service and USDA, revealed that minimum cultivation of a young bearing grapefruit grove on Sandy Ridge gave higher yields. A seven-year trial compared three types of cultivation.

Clean cultivation in the dry season, (B) minimum cultivation by one or two annual rotary choppings, and (C) fall plowing plus minimum cultivation was carried out in a grapefruit grove on Lakeland fine sand in the north-central ridge section of the Florida citrus belt.

Yearly trends usually agreed with the over-all response that minimum cultivation was the best cultural practice. Compared to the other two treatments, this method gave an average greater yield of about a bushel more fruit per tree each year.

The method of cultivation was more important in the on-crop years than it was in the off-crop years.

GOLDEN HOOF

There's money in sheep. And this money likely will continue to be for several years.

Numbers are down to little more than half of those of 15 or 20 years ago. Wool prices are supported at an average level of 62 cents.

As certain as anything can be in agriculture, men maintaining good flocks for the next several years will know why the expression "golden hoof" is used.

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Vegetable Pests

(Continued from page 15)

with webs. They are most important because they attack buds of the plants, stopping their growth or killing them.

Other Pests

Of the other pests of crucifers, leaf miners are among the most interesting. The adult **serpentine leaf miner** is a small fly only about 1/20th of an inch long; yellowish beneath, and black on top. The major damage is caused by tiny larvae or maggots feeding on the tissue between the leaf surfaces. This injury results in winding light-colored trails or "mines" which increase in diameter as the maggots grow larger.

Among the cucumber beetles attacking crucifers, the most important is the **banded cucumber beetle.** Yellowish-green with three bright green stripes or bands running across the wing covers, these pests are less than one-fourth of an inch long.

Several other pests which may be troublesome on crucifers include:

Flea beetles, which are small, hard pests that jump; **green stink bugs** that have piercing-sucking mouthparts with which they withdraw plant sap, and other species of caterpillars.

Principal pests of endive (escarole), lettuce and romaine are aphids, cutworms, wireworms and mole-crickets, which were discussed above under general feeders.

Lygus bugs and cucumber beetles are pests of lettuce. Other insects may become troublesome on these leafy crops from time to time.

LEAF DAMAGE caused by cabbage looper. Note caterpillar on lower right corner and in the insert. Insert is about natural size.

Control

In order to consistently produce vegetables with a minimum amount of insect damage and contamination, a careful and thorough insect control program must be conducted. To accomplish this objective, a grower should make periodic inspections to determine when insecticides are needed.

Should damaging insect populations be allowed to become established, especially in the heads of cabbage, then the cause is lost. A preventive program may be desirable for a crop like cabbage for growers who cannot make frequent and thorough field inspections to detect early insect infestations.

We frequently speak of the "Four R's" in pest control: (1) the right material applied at (2) the right dosage at (3) the right time and in (4) the right way.

The pest control program should be managed by someone with a genuine interest in the crop and in the returns that it will yield.

Recommended Practices

Insecticides recommended for control of the above pests can be used in commercial plantings and in home gardens. However, due to the toxicity of such materials as parathion, TEPP and demeton (Systox), most home gardeners will prefer to use a substitute such as malathion.

Aphids on various crops are effectively controlled by parathion. TEPP is also effective, and has a very short residual which makes it especially useful during the harvest season.

Demeton (Systox) is a very effective aphicide. But at present it is approved for use only on cabbage, cauliflower, broccoli and lettuce; also, it should not be used later than 21 days before harvest.

Plowing under weeds and grasses at least a month before planting aids in reducing the number of cutworms in the soil. For best results, prepare land at least a month before planting and apply chlordane, toxaphene or endrin as a dust, spray or bait a week before seeding or transplanting.

When cutworms become a problem after transplanting or plant

"ORTHO products mean money in the bank to growers,"

states Jeff Davis, production manager of Caroline Flower Farms, growing corn, cucumber, eggplant, and gladioli at Ft. Myers, Florida. "ORTHO products are the best I have ever used for fungicide and pesticide controls," Mr. Davis says.

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emergence, use only baits containing toxaphene or chlordane for endive (escarole), lettuce and romaine. Toxaphene dusts and sprays may injure young seedlings or newly transplanted lettuce.

Mole-crickets are best controlled by applying chlordane as dust, spray or bait several days before seeding or transplanting crop if mole-cricket tunnels are evident. Baits should be applied in the late afternoon, when the soil is moist and warm.

In fields where wireworms are known to be a problem, control measures must be applied before the crop is planted. Apply heptachlor, aldrin or chlordane evenly over the soil surface and disk into the soil.

Some of the caterpillar pests of cabbage, cauliflower and broccoli have become increasingly difficult to control with DDT and toxaphene. Excellent control of "worms" on cabbage can be obtained by using endrin at 14-day intervals up until the first cupping of the leaves in the formation of the head.

After this time, parathion or parathion plus toxaphene is recommended on a 7-day schedule for commercial plantings. During the harvest period, make these applications immediately after each weekly cutting.

If treatments at less than 7-day intervals are needed, use phosdrin (not less than four days before harvest) or rotenone. Toxaphene generally gives satisfactory control of caterpillars in the home garden.

Due to the waxy foliage, indications are that dusts are more effective than sprays on cabbage. Adding a spreader-sticker to sprays may improve control.

Precautions

When using insecticides, always read the manufacturer's label carefully and thoroughly; observe all precautions.

Dosages given on the label of each container should be strictly followed; a great deal of time has been devoted to determining the correct dosage. Too much insecticide may injure the crop or leave harmful residues; too little insecticide will not give the desired control. Materials like parathion, TEPP and demeton (Systox) are especially toxic.

For the protection of the consumer, residue tolerances have been set for most insecticides used on vegetables. Minimum days between last application and harvest are available for most insecticides recommended for use on vegetables. In many instances, these intervals are given on the insecticide label.

Several sources of information on pest control are available to vegetable growers. Contact your County Agricultural Agent, or one of the Branch Experiment Stations or field laboratories near you, or write to either the Agricultural Extension Service or the Agricultural Experiment Station, University of Florida, Gainesville, for assistance.

Florida Farmers Planting More Hybrid Corn Seed

FLORIDA currently leads seven of her sister Southern states in corn acreage—89.5%—planted with hybrid seeds.

Hybrid acreage of the other Southern states is: Texas, 85%; Alabama, 80.5%; North Carolina, 79%; Georgia, 75%; South Carolina, 66%; Louisiana, 61.5%, and Mississippi, 57.5%.

Corn acreage planted with hybrid seed throughout the United States in 1957 declined nearly 3.5 million acres (to 68.1 million acres) from 1956, according to USDA's Crop Reporting Board. However, this decline is less than the 5-million-acre drop in all corn planted.

Percentage-wise, the 1957 total acreage planted with hybrid varieties edged upward to 92.5—from 91.1% in 1956. The 1955 total was 89.4%

The commercial corn area of the North Central States has been planting nearly all corn acreage with hybrid varieties for a number of years.

Almost all sections just outside the main commercial area are now planting from about 80 to 99% of the acreage with hybrids. All North Atlantic States plus Delaware, Maryland and Virginia planted from 91 to 99% with hybrids this year.

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Florigold Hybrid Sweet Corn

Plant breeders at three of Ferry-Morse's research centers . . . in Florida, Michigan, and California . . . pooled their skills to bring you Florigold—the hybrid sweet corn that is highly tolerant of Helminthosporium turcicum, even under severe blight conditions.

Florigold matures 3 days earlier than Golden Security. Plants are about 6½ feet tall. Ears borne about 3 feet above ground are easy to snap, and average 7¾" to 8¼" long—just right for packing 5 dozen to a crate. Tip fill is good. Kernels (14 to 16 rows) are rich, medium-light gold, narrow, and medium deep.

Disease resistance, combined with quality, kernel color and size, makes Florigold a superior, high-yielding shipping corn. For more information on Florigold's outstanding performance in Florida, check with our representatives in Tampa.

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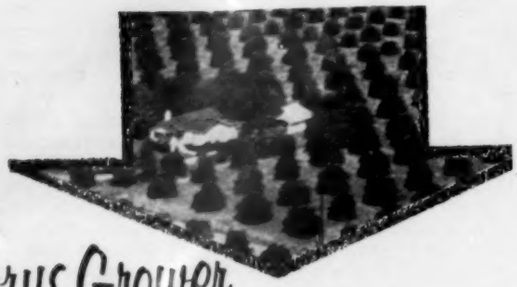

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By Fred P. Lawrence
Citriculturist
Florida Agricultural Extension Service

Now—
Back To Terra Firma

Shall we try to forget Sputnik, Muttnik, and a rocket to the moon long enough to concentrate on some problems existing on the good solid earth—specifically in orange groves in Florida where many acres are steadily falling off in production?

One of the contributing factors to this condition is overcrowding. When limbs and branches of citrus trees in groves overlap, the bearing surface diminishes; naturally, production declines in proportion to the loss of bearing surface. Growers have a choice of hedging, topping, skeletonizing, or actually removing some of the trees; otherwise, the production decline will continue.

Each of these operations has its *pro's* and *con's*. However, based on limited records, hedging has proved to be the least expensive and most profitable operation.

Hedging

Hedging provides a means by which the bearing surface of trees is reduced in area without greatly reducing their bearing capacity after the first year. For some varieties, especially the Tangerine, hedging actually increases the per cent of pack out of fresh fruit in the first crop following the pruning operation by increasing sizes. Fruit color and texture often improve because of increased sunlight and more effective insect and disease control.

An advantageous aspect of hedging, and the primary reason for its use, is that it opens tree middles by removing interlocking and low hanging branches to allow for the movement of tractors, discs, spray and dust machines, and trucks through the grove without damage to trees, fruit or equipment. The resulting speeding up of operations reduces cultural costs.

Opening tree middles also encourages the growth of cover crops that are important in conserving applied fertilizers and in supplying food for soil micro-organisms.

These advantages—in most cases —seem to offset the initial cost of the operation, the reduction in total fruit crop for the first year or two, and the problem of removing the brush.

Several factors influence the pattern to be adopted in hedging—the way the grove is set, the variety of fruit, and the desired extent of the initial operation. Whenever possible, it is recommended that the first project be done in a north-south direction to take advantage of increased sunlight.

Experience has shown that hedging the trees to a 7 or 8 foot opening will allow most machinery to pass through and does not reduce excessively the bearing surface of the trees. The common practice is to hedge in one direction—then, two years later, in the opposite direction. The operation must be repeated every three to five years, depending on the growth of the trees.

For best results, the work should be done in late winter while the trees are dormant and should be completed before spring growth begins. In some cases, this may mean hedging while the old crop is still on the tree. Even so, it is considered a good practice to take a salvage price for fruit rather than to delay pruning beyond the time for the spring flush of growth. In the case of Valencias, it may be possible to salvage the fruit pruned off by moving it along with the late mid-season fruit.

Additional information on this procedure is available in the Agricultural Extension Service Circular 115, "Hedging of Florida Citrus," by Robert E. Norris, Lake County Agricultural Agent. The circular contains diagrams, facts and figures, as well as many useful suggestions and is available from this office on request.

Taking Stock

During this autumn season, the grower's primary concern is naturally the marketing of his fruit. And well it should be!

However, it seems a good time also to engage in another produc-

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tion-wise and farsighted endeavor: namely, to follow the picking crew through the grove and find out which trees are consistently shy producers and those that are producing poor quality fruit.

Striving for better than average certainly merits more than casual attention. A thorough procedure would warrant consulting an economic study on citrus production by any grower who is really interested in efficient operation.

Anything that stands in the way of efficient operation should be replaced: machinery, materials, even trees. In order to have a profitable operation, the grower must keep himself well informed on fertilizer costs, pest control practices and tax levels, as well as the market situation. He should ascertain if a certain cultural operation is necessary or if it is just a habit—or if he is only doing what others say.

Citrus growing is a highly competitive enterprise, and growers who are satisfied to be in the middle may find themselves *in the red.*

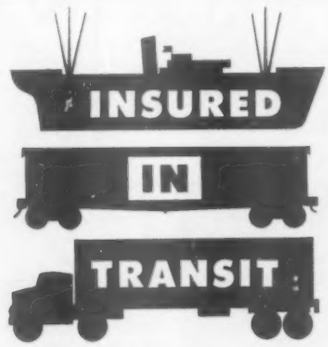
* * *

New Plant Estrogen

USDA scientists report that they have isolated and determined the structure of a new and potentially valuable estrogenic hormone from Ladino clover. A crystalline substance, it is named "coumestrol."

Coumestrol is not only different in chemical structure from known animal estrogens, the scientists say, but it differs also from plant estrogens previously isolated.

The new compound is about 30 times more active than genistein, one of the most potent estrogens previously reported in forage crops. However it is considerably less powerful in its effects on animals than the synthetic estrogen, stilbestrol.



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Ayers Resigns From State Plant Board

ED L. AYERS, Commissioner of the State Plant Board for the past five years, will leave that post on December 31 to engage in private business.

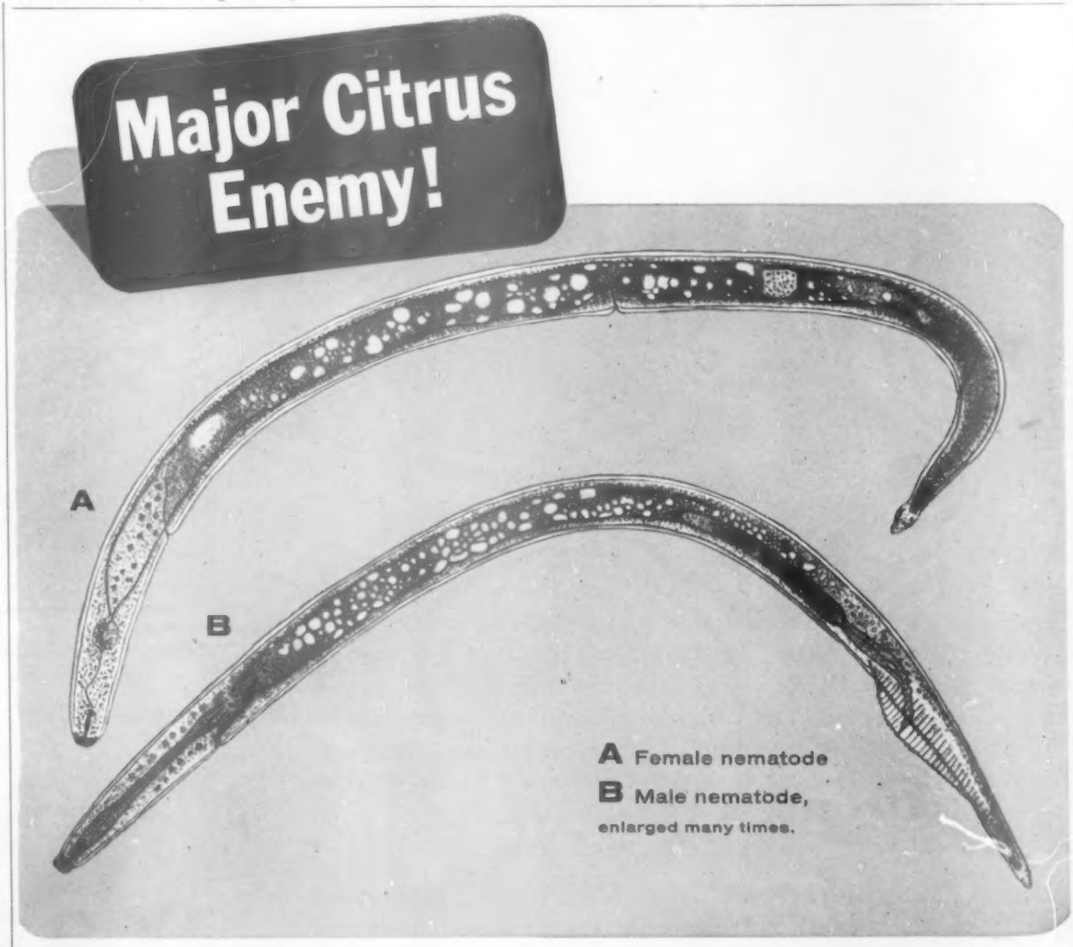
Dr. W. G. Cowperthwaite, who was recently made assistant plant commissioner, will probably be appointed to fill the vacancy. Ayers recommended that Dr. Cowperthwaite be named his successor, and the State Board of Control has indicated its agreement.

"My original plans were to work for the plant board for five years, which period ended on August 1 of this year," Ayers explained. "I desire to return to my home in Bradenton to engage in private business."

Board of Control members lauded Ayers for outstanding work as plant commissioner and expressed regret that he was leaving. (See editorial: "Well Done, Mr. Ayers.")

The commissioner-elect was assistant horticulturist at the Gulf Coast Experiment Station, Bradenton, from 1950 to 1952. He was employed by Grasselli Chemical Division, E. I. duPont de Nemours & Co. from 1952 to 1954.

From 1954 until he was made assistant plant board commissioner, Dr. Cowperthwaite was field manager of a large commercial gladiolus operation in Delray Beach.



D-D® kills nematodes

SOIL FUMIGANT

Nematodes are one of the chief causes of serious citrus downgrading. Nematode damage results in citrus losses amounting to millions each season.

Stop these pests from damaging your citrus trees. *Before planting,* knock out nematodes with powerful D-D soil fumigant.

D-D soil fumigant is an easy-to-use liquid. Injected into the soil with inexpensive tractor attachment or gravity-flow plow equipment, it becomes a potent gas, killing nematodes as it spreads. And it's economical, too. One pre-plant treatment is all you need for effective control.

What's more, D-D soil fumigant kills other citrus-stunting nematodes such as burrowing root knot, meadow, and citrus nematodes. Important, too, this powerful soil fumigant prevents resuckering of old nematode-infested roots.

Don't gamble with nematodes in your new grove. Use D-D soil fumigant before you plant. It's available from your pesticide dealer. See him today.

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AGRICULTURAL CHEMICAL SALES DIVISION
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SHELL

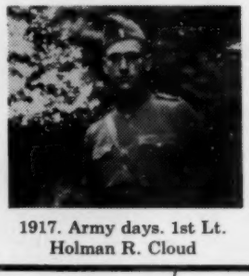
Holman Cloud
CAME TO STAY

He makes molehills out of mountains.

Example: In 1945, Minute Maid produced 90,000 gallons of frozen citrus concentrate a season. Time today—*8 hours.*

Incredible? Not for Holman R. Cloud—vice president in charge of operations for the multi-million dollar corporation. He thrives on challenge. And on change. Like the one he made 35 years ago when he left home in Indiana—and came to Florida.

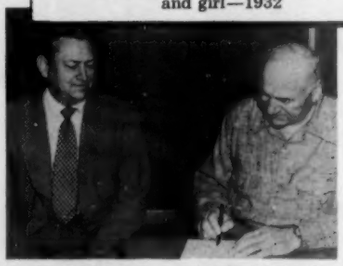
To stay.



1917. Army days. 1st Lt. Holman R. Cloud

Plymouth, Fla., 1925. The fishing in Indiana was never like this!

Holman with his little boy and girl—1932



1955. Signing up one of Minute Maid's growers.

"It wasn't a snap decision," Holman says. "Electric power was my first love. I'd returned from World War I and France, and spent a year each with the Metropolitan Edison and Indiana Power Companies. But by 1921 I knew where my future lay . . . South. Came down and joined the Florida Public Service Company, Orlando. Spent 24 years there. Also, got to know and like the frozen citrus concentrate business. It was in its infancy then—bursting with opportunities. Just couldn't resist it. So in 1945, when Minute Maid was formed, I went with them—in Orlando. Yes, I've great confidence in this industry . . . and in this state."

Holman Cloud's faith in Florida and its future is shared by many folks from many states and many backgrounds. Industries too. Among them, a new neighbor . . . Union Bag-Camp Paper Corporation, whose modern corrugated box plant in Lakeland now serves the fast-expanding citrus and produce trades and other Florida industries.

The service is "around the corner." Fast, reliable, economical . . . and permanent.

We're proud to say, along with Holman, "We came to stay."

A new Florida neighbor. Union's modern corrugated box plant at Lakeland to serve the citrus and produce trades and industry throughout the state.

union camp **UNION BOXES**

UNION BAG-CAMP PAPER Corporation - LAKELAND, FLORIDA

LOVELY and UNIQUE decanter decoration is displayed by Mrs. J. W. Baker (left) to Mrs. Harry Kelly.

Living IN FLORIDA

by BARBARA CLENDINEN

THE HEAD of our house calls it Christmas madness—the hours I spend turning prosaic gifts into shining packages.

But he grins with huge enjoyment when he finds a miniature Santa Claus in a shiny red suit, addressed to him. And spends a happy five minutes guessing its contents before he swoops on the truth that Santa's bell-bottom is really the butt end of a prized Virginia ham.

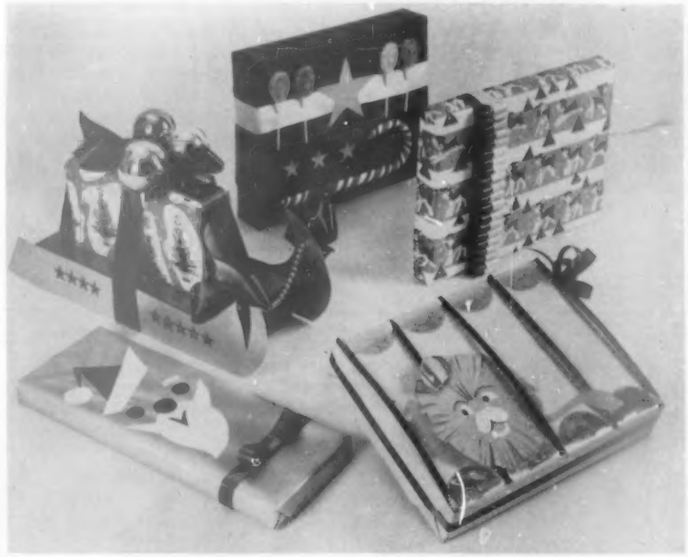
Our son's Christmas watch will be fun from the first ribbon on the big suitbox all the way through a succession of smaller boxes. Even Baby Sister has a package with candy suckers ribboned onto bright red paper and a peppermint cane taped beneath a row of stars.

Here are more ideas for Christmas packages:

Sprinkle sachet into the surrounding tissue on gifts of lingerie, hosiery or gloves. It adds a special, feminine air.

Count a lawyer on your Christmas list? Give the legal lion a languid Leo package, fringing a circle of colored gummed paper for Leo's head, cutting a tail of the same color and pasting it to the wrapped package. Use black crayon or watercolor for eyebrows and white paper for nose and mouth. Black pipe cleaners and gold legal seals form the cage.

Special Christmas Packages



Tired of ties in their recognizable, long boxes? Turn one into a Santa, cutting hat, beard and eyes from red and white paper and gluing them onto shiny gold wrapping.

Two packages for a very special person can turn into a miniature sleigh. On the larger box, wrapped in red, paste sleigh runners cut from stiff silver paper and trimmed with tiny stars. Place the smaller box atop and tie the two together with tree balls and green ribbon.

Package a present for a tiny tot with a paper of merry little fawns. Loop the red and white tyings to look like ribbon candy. Fasten the loops with cellophane tape.

Make smiling clowns for another gift, using poker chips for faces with caps, collars and ruffs of red lawyers' seals. String the clown faces from shiny gold ribbon on a bright green package.

Giving jars of preserves, guava jelly or jam for Christmas? Place the jars on sheets of red, pink and pale green tissue. Draw into a pouf at the top and tie two tiny pine cones on to the ribbon bow.

Fill an empty oatmeal box with Christmas cookies, then turn it into a sparkling candle with bright red paper, ribboned in silver tinsel with dots of gold and a flame of loops of gold cellophane.

These are just a beginning—add your own bright ideas for the merriest Christmas yet.

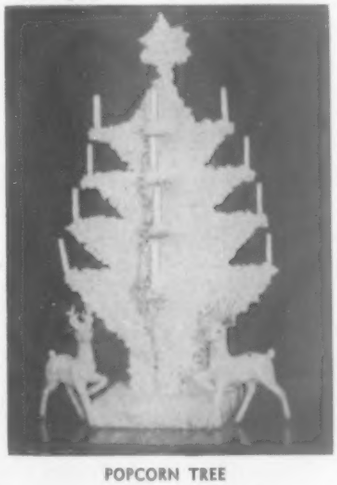
YARD & GARDEN

By MARGUERITE SCHWAEN

CHRISTMAS BEAUTY grows in your garden, waiting your magic to bring it to life. Bare twisted branches, dried leaves, seed pods, cones and berries can be changed with modern witchcraft into silver and gold filigree.

The wand that turns run-of-the-garden items into Christmas decorations consists of a spray paint can, a few vials of multi-colored glitter and a frosty mist of pine-scented snow, coveniently packaged in an aerosol bomb.

For small rooms or special corners, a tiny tree is delightful, especially if it's like the popcorn tree pictured on this page. Far removed from its old-fashioned predecessor, this one's high style and handsome for rooms with modern decor.



POPCORN TREE

To make it, you'll need two cans of popcorn and two pieces of hardware cloth approximately 24 inches square. Cut each square into tree form, then cut one tree halfway down from the top and the other half way up from the bottom and put the two together.

Next fasten the tree form to a wooden base, 12 inches square, using a dowel pin (obtainable at hardware stores) to make it secure. The branches of the tree are cut with elongated tips and curled inward to hold peppermint stick candles. Then the tree is covered with popped corn, using transparent glue to make it stick. From the tipmost branch, a plastic snowflake gleams like a Christmas star.

Mantle Twins

Mrs. J. W. Baker, Tampa, designed the tree and the richly decorated decanter with which she and Mrs. Harry Kelly, North Tampa Garden Club president, are pictured.

Using interestingly shaped bottles, she solved the problem of the small opening by cutting a strip of styrofoam the size of a candle and inserting it into the lip. Then she anchored the main stem of the design in the styrofoam and wired the other material in the arrangement to the main stem.

The entire arrangement, including the bottle container, can be sprayed with gold, silver, bronze or white and highlighted with dashes of glitter. A pair adds distinction to an important spot in your holiday house.

When Mrs. Baker wrote the schedule for the North Tampa Garden Club's Christmas show December 14, she named one section "Treasures of the Earth" with classes labeled "Gold," "Frankincense" and "Myrrh."

Gilded, dried plant material was specified for the first class, red flowers, like poinsettia, for the second and winter greenery for the last. It's a charming trio to keep in mind as you deck your halls this Christmas.

BEST RECIPE OF THE MONTH

SUGARPLUMS danced through readers' heads when they answered our request for Christmas recipes. Scarcely one main-dish steamed among the kettleful of goodies. Winners are a cake, a candy and a cookie recipe, all sure to add cheer to the holidays.

From Mrs. Lena V. Phelps, Route I, Jasper, Fla., this rich, moist, altogether wonderful:

JAPANESE FRUIT CAKE

¼ cup butter
2 cups sugar
6 beaten eggs
2 teaspoons vanilla
1 cup milk
3 cups sifted flour
1 teaspoon baking powder
¼ teaspoon salt
1 teaspoon cloves
1 pound chopped raisins
1 pound chopped nuts
1 teaspoon cinnamon

Sift flour; add baking powder and salt, and sift again. Cream butter and sugar thoroughly. Add eggs and vanilla. Beat well. Add dry ingredients alternately with milk, beating well after each addition. Add nuts.

Spoon one-third of batter into prepared 9 inch cake pan. To rest of batter, add spices and raisins. Pour into two 8 inch cake pans. Bake at 350 degrees 30 minutes or until done.

FILLING

1 cup flour
2 cups sugar
⅓ cup boiling water
grated rind and juice of 2 lemons
1 fresh grated coconut
4 egg whites, beaten stiff

Mix flour and sugar with boiling water and lemon juice. Add rind; cook until thick. Cool, add part of coconut. Gradually fold into stiff egg whites. Fill and frost cake. Sprinkle with coconut. Decorate with red and green maraschino cherries.

• • •

To Mrs. Alice Ingram, 1246 Edgewood Dr., Lakeland, goes $2 for these:

JUST-MUST-MAKE COOKIES

½ cup shortening
1 cup light brown sugar
2 eggs, lightly beaten
2 cups all purpose flour
½ teaspoon soda
¼ teaspoon salt
½ teaspoon nutmeg
½ teaspoon cinnamon
2 tablespoons sour cream
1 teaspoon vanilla extract
½ cup seedless raisins
¼ cup candied cherries
¼ cup citron
½ cup dates
½ cup nuts

Cream shortening with sugar well, add beaten eggs, blend thoroughly. Sift dry ingredients, add to egg mixture, blending well, then add vanilla and sour cream mixed. Mince nuts and fruits fine, add to dough.

Chill thoroughly, then break off small pieces, forming into small balls. Place in greased pans and bake at 400 degrees, 12 minutes.

• • •

Chantilly cream squares are famous in Philadelphia. One of the best native American candies, says Miss Hazel N. Spence, 950 Bay St., N.E., St. Petersburg, who suggests them for Christmas cooking.

CHANTILLY CREAM SQUARES

2 cups sugar
¼ cup heavy cream
1 cup milk
2 tablespoons light corn sirup
⅛ teaspoon salt

Combine above ingredients in saucepan, place over low heat and stir constantly until 238 degrees, or until it forms a soft ball when small portion is dropped into cold water. Cool.

Add 1 teaspoon vanilla. Beat until creamy, then add: ½ cup pecan halves and ½ cup walnuts.

Pour quickly into shallow buttered pan, 11 by 7 inches. When cold, cut into squares. In a tight box, this improves with age.

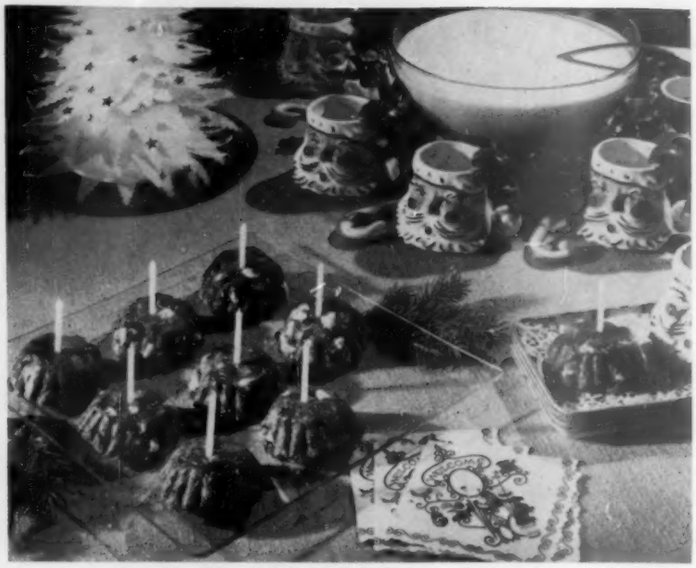
Note: One and a half squares bitter chocolate may be added to first mixture but Miss Spence says classic cream is ivory colored and flavored with vanilla only.

Strawberries will add crimson glory to our tables in February. What's your favorite way of serving them?

We'll pay $5 for the best berry recipe printed in our February home section. It can be dessert, salad, preserves, or jelly—just so it's mailed to our address by December 30. Send it off, before Christmas sends it right out of your head, to:

Recipe Contest
FLORIDA GROWER
AND RANCHER
Tampa, Fla.
P. O. Box 2350

Include your name, address and telephone number. Second prize is $2; honorable mention wins a three-year subscription or renewal, to be mailed to your address or as a gift to someone else.



Merry Christmas to All!

Plentiful Foods for December

Broilers and fryers head the plentiful foods list for December, according to the Food Distribution Division of USDA's Agricultural Marketing Service.

Other plentiful items for the holiday-month include turkeys, pork, apples, winter pears, fresh oranges and grapefruit, cranberries, canned and frozen peas, almonds and filberts.

MENU SPARKLE

Give sparkle to your menu with a molded salad. Mold shredded unpeeled red apple, grated carrot and plump light or dark raisins in a glistening orange-flavored gelatin.

Steam the raisins a few minutes in hot water to insure their plump juiciness.

To make exceptionally tasty hors d'oeuvres, fill pitted ripe olives with bits of green onions and wrap in flat anchovies. Fasten in place with cocktail picks.

Favorful canned cling peach slices and homogenized milk mixed to satin smoothness in an electric blender to make a tasty drink to serve with a luncheon sandwich.

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Delicious "Slim Pickin's" for Holiday Parties

By LORA A. KISER

HOLIDAY PARTIES can undo months of dieting. You'll be the most popular hostess in town if you keep that in mind.

Because the majority of adults watch their weight today, they'll love you if you serve delicacies which compliment their taste buds without taxing their will power.

Happily in that class are these low-calorie goodies suggested by Alice Cromartie, a nutritionist who knows all the answers.

Holiday Party Menu

Cranberry Punch
Cold Sliced Chicken or
Turkey with Orange Slices
Beef Pinwheels Stuffed Dates

Cranberry Punch

Use cranberry juice, if available, and chill. Serve with no added sugar. Decorate punch bowl with holly and berries. If cranberry juice isn't available, use following recipe.

2 cans jellied cranberry sauce
4 cups water
4 cups orange juice
½ cup sugar

Crush sauce and add water. Beat with rotary beater to dissolve. Add sugar and orange juice. Chill and serve. Yield 2½ quarts.

Cold Sliced Chicken or Turkey

Slice turkey or chicken as thick as possible. Cut into finger length pieces. Arrange attractively on platter garnished with orange slices cut in half. (Leave rind on for color and convenience in eating.)

Beef Pinwheels

Use dried beef. Place several slices on cutting board. Spread with onion-flavored cottage cheese. Roll as for jelly roll. Chill. Slice ½ inch thick before serving.

To make Onion-flavored Cottage Cheese: force a 12 ounce carton of cheese through a sieve, add 1 teaspoon finely grated onion. Mix well. Must be stiff.

Stuffed Dates

For the sweet on your table stuff some plump dates with a half pecan. Dust with powdered sugar.

Another Party Menu

Cold Marinaded Shrimp
Celery filled with Sharp Cheese
Deviled Ham Balls
Melba Toast Rounds
Hot Coffee

Shrimp: Boil and de-vein shrimp. Make a marinade of ¼ cup salad oil, ½ cup lime juice, ½ cup water, 1 clove garlic, crushed, a bay leaf and 6 whole cloves. Let shrimp stand in this 4-6 hours in refrigerator. To serve, drain, spear with cocktail toothpicks and arrange on bed of crisp parsley.

Filled Celery: Wash celery and remove tough fibers on outer stalks. Fill celery with a soft sharp cheese. Cut in 1 inch pieces and chill in covered container until serving time. Arrange on platter with Ham Balls.

Ham Balls: Mash two cans deviled ham with fork. Add 1 teaspoon grated onion and ½ cup cottage cheese. Blend. Form into small balls. Roll in finely chopped parsley. Chill until serving time.

Fruit Tray Deluxe

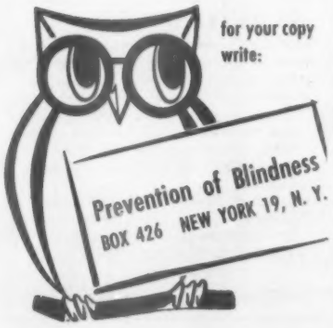
Use choice fruit; wash. Section citrus fruits. Wash strawberries and place on paper towels at once to drain. Slice bananas and cover with juice from citrus sections. Peel fresh pineapple and slice in fingers.

Wash seedless grapes and clip into small clusters; drain. Peel and cube papaya. Sprinkle with lime juice and chill. Peel avocado and slice. Cover with lime or other citrus juice. Chill.

Just before serving, arrange on a large plate in an attractive manner. Garnish with mint and pass powdered sugar or place it on a dish. May include cubes of sharp cheese.

Serve piping hot, little muffins and steaming coffee with this fruit tray, and it will be a conversation piece.

Free eye care folder
A WORD TO THE WISE
(take care of your eyes)



"Pinch you? What for?

How smart are YOU

(Answers to Questions on Page 2)

1. *Tiny Tim.*
2. *Since the middle of the 19th Century.*
3. *Gold, frankincense and myrrh.*
4. *Matthew and Luke.*
5. *Yes—if he has also been a resident for 14 years.*
6. *Six.*
7. *Kate Douglas Wiggins.*
8. *Always an even number.*
9. *No; "blind as a bat" is incorrect.*
10. *The rat.*

SHORT CUTS

(A $1 check will be awarded for each Short Cut published.)

If you're the weight watcher in your family and the only one who eats a low calorie bread, you'll probably find that it mildews or becomes dry before the loaf is eaten. Repackage each loaf, wrapping three or four slices in each package. Store these small quantities in refrigerator or freezer, use as needed. It will stay fresh and sweet. *M.P.S., S. Norwalk, Conn.*

* * *

A small brass-bristle brush, designed to clean suede shoes, is an ideal pot cleaner. It won't rust or corrode and can be bought at any variety store. *V. L., Boynton Beach, Fla.*

* * *

Leftover roofing cement will keep well if water is poured over it and the top put back on. When ready to use, pour off water—you'll find cement in good shape. To stop a leak in bucket or pail quickly, put a little cement on tiny piece of cloth, press over leak, allow to dry. Makes a sound patch. *E.R., Mango, Fla.*

* * *

If spools have tendency to fly off the spindle of your sewing machine as you are winding a bobbin, clamp a spring type clothes pin above the spool. It will stay in place. Another hint: bandage gauze makes a satisfactory facing for hems when you're lengthening little girls' dresses. It won't shrink or pucker when washed. *R.S., Atlanta, Ga.*

* * *

Merry Christmas

SEWING CORNER

Trim Two-Piecer

It's easy to sew this good-looking two-piece frock and a joy to wear its slim lines. Note the princess fit of the jacket, the button detail and the piquant bow.

Printed Pattern 9178: Misses sizes 12, 14, 16, 18 and 20. Size 16 takes 4⅛ yards 35 inch fabric and ½ yard contrast.

Send 35 cents in coins for this pattern; add 5 cents for first class mailing. Send to:

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Youth Has Its Say

TWO TEEN-AGE GIRLS won $5 each with their interesting replies to our query: "If a fairy godmother could grant you just one wish, what would it be?"

Answers were varied in our mailbag, ranging from handsome boyfriends to fluffy white kittens.

Here are the two selected by our youth contest judges:

ONE WISH - - -

Dear Editor:

If I had just one wish, I would wish for black horses—black Arabian horses, that is. They would have

to be like the picture I am sending, strong, healthy black Arabian mares. Of course, I'd accept any other kind, but the black Arabian mare is my favorite.

Sincerely,
Elizabeth Mainor, Age 13
Route 4, Box 730
Brooksville, Fla.

- - - FIRST OF MANY

Dear Editor:

If fairy godmothers really did whisk in and out of this atomic world to grant us any wish, I would probably want many things. But I think my first wish would be that I might become a model. It doesn't matter what type of model although I think I'd like to model teenage fashions best.

I would like to model everything from sportswear and casual attire to formal party dresses. I would like to model before cameras but I wouldn't want that to be the extent of my career.

It would take a very wonderful fairy godmother to grant me that wish and how I'd love her for doing it!

Sincerely yours,
Ann Gunter
Route 2, Box 337
Perry, Fla.

Name That Tune

Hum us a melody with typewriter or pen—we'd like to know your favorite. If you're between 10 and 20 years old, you're eligible for our Youth Has Its Say contest. For our February issue, we're interested in your very most favorite song.

Whether you're a cat or a square, tell us your choice in 200 words or less. If we print your letter, you'll receive a crisp $5 check. Mail your entry, telling us why you like that tune, to:

Youth Contest
FLORIDA GROWER AND RANCHER
P. O. Box 2350
Tampa, Fla.

Be sure to include your name, address, age and telephone number.

LIVE BETTER . . .
WORK BETTER . . .
FARM BETTER
Electrically

FLORIDA POWER CORPORATION

Chocolate Curls

A white frosting topped with small chocolate curls can add a festive air to cake. Just barely warm a bar of chocolate (do not melt).

With a razor blade or peeler, take off thin shavings from back or sides of chocolate. Sprinkle over the top of the icing. Just as pretty as a picture.

Forecasts Help Growers With Spray Program

SHADES OF NOSTRADAMUS! Prevalence of coming citrus pest infestations can be foretold—and to the advantage of growers!

Admittedly only a small percentage of the medieval French astrologer's predictions came true. But that was enough to assure him a place in history.

Eighty percent accuracy, however, is the proud and proven record concerning predictions about coming citrus pest infestations. By using information obtained through modern science and research, growers can make spray or dust applications before excessive damage is done.

Often applications can be timed to coincide with the period when insects are most easily killed. And often, when the population of a given insect or mite is known to be low or declining, an application that might have been made "by the calendar" can be omitted.

Such information will help to save growers some of the $20 million spent each year for the control of insects and mites. It will also reduce losses, totaling additional millions, that occur in spite of this expenditure for pest control.

Dr. Robert M. Pratt, associate entomologist-pathologist, gives the following report on this project being conducted at the Lake Alfred Citrus Experiment Station:

Data Gathered

To forecast insect and mite populations, it is first necessary to know the average populations at all times, and to have information on annual cycles of hatching and infestation. To get this information, an experiment was started seven years ago in which 130 representative citrus groves located in 22 counties were visited once a month.

Counts of scales and mites were made; other conditions which may affect infestations were observed. This information was recorded on punch cards, of which over 10,000 have been accumulated. Graphs are made so that changes in populations can be easily studied.

Records published by the U. S. Weather Bureau are available. In addition, four weather stations are operating in cooperation with the Federal-State Frost Warning Service at Lakeland.

Although many factors—including natural enemies and cultural practices—affect insect populations, weather has the greatest effect. Much progress can be made in forecasting by studying the annual cycles of infestation by insects and mites.

But to anticipate departures from the average, it is necessary to learn as much as possible about relations between weather and abundance of pests. In some cases, a change in weather is followed almost immediately by a population change. However in other cases, the effect may not be apparent until months later.

Mite Populations

If December is cold, the population of six-spotted mites will increase on old leaves and later cause severe injury to the spring flush of leaves in April and May. But if December is warm, very few mites will be found before April and new leaves will not be damaged much.

Cold weather in December and January may be followed by an outbreak of purple mites. This mite, however, is sensitive to rainfall. Consequently as a rule, unless the spring months are dry, a general outbreak will not result.

For example: In 1956, January was cold and there was little rainfall through June. As a result, purple mite infestations were general and severe.

In the current season, December and January were warm; rainfall has been frequent since late January. And purple mite populations have been far below normal.

Rust mites have been found to be most abundant during periods of wet weather. Heaviest infestations occur during the summer rainy season and in winter when fog and dew occur frequently.

Red scale infestations in late summer and fall are influenced by temperature and rainfall in the period from January through March. If that period is cold and dry, a fall outbreak can be expected. On the basis of this information, *it is possible to forecast at the end of March what the red scale population will be from July through December.*

The critical period for purple scale is December and January. If that period is warm, the purple scale population can be expected to be high the following December. When that occurs, infestations can be expected to be average until the following July.

Over a five year period, more than 80% of forecasts made have been correct. As more information is accumulated, more accuracy and longer forecasts will be possible.

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like our supervision and management services because they save money, increase profits and make things run smoother. Write for details.
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FLORIDA AGRICULTURAL SERVICE
Box 1429 PLANT CITY, FLA. Phone 2-2931

Flatwoods

(Continued from Page 11)

used in consideration of these soils for citrus planting. Equally as important as soil drainage is the provision for adequate irrigation during periods of drought.

Generally, citrus trees planted on inadequately-drained soils show the greatest stress during periods of dry weather. This can be visualized by considering the drawing on page 11.

If we consider a situation where adequate drainage is provided only to a depth of two feet, then there will be no root system in the two- to six-foot depth. The water which this tree can extract during a drought period will be limited to that contained in a two-foot depth of soil only.

About how much water would this be; how long will it last?

Computing the Supply

The answer to this question is variable, depending largely on atmospheric temperature. If we assume an acre 6″ of soil weighs 2 million pounds (or 46 pounds per square foot), then a tree planted on a 25-foot spacing would occupy 625 square feet; the soil to a depth of two feet would weigh 115,000 pounds.

Continuing our figuring: If we consider the available moisture to be 4%, then this area of soil will contain about 550 gallons of water to a depth of two feet. The average transpiration, as calculated by Koo[1], would be 50 gallons per day for an average temperature of 80°F. and 25 gallons per day for an average temperature of 65°F.

Mathematical calculation therefore tells us that this would be sufficient water for only 11 high temperature days, and about 22 days for the lower temperature. *Actually, the time would be somewhat shorter—because no provision is made here for moisture lost by evaporation from the soil surface.*

By comparison with a similar area where the drainage and root zone extend to six feet, for example, we have approximately three times the storage capacity. Furthermore, the time intervals would be increased to about 30 days, even during periods of warm weather.

This illustrates very clearly the extreme importance of irrigation, especially on soils where drainage is inadequate. It further emphasizes the importance of soil drainage, since the need for irrigation is greatly reduced in a soil adequately drained.

Future for Flatwoods?

We have every reason to believe that flatwoods soils free from cold, adequately drained, can be used for citrus production. But this, unfortunately, does not really solve the problem.

Not a single citrus grower in Florida is growing citrus just to satisfy himself that this is possible. He is primarily interested in growing citrus for the net return he can realize on the capital invested.

Growing citrus on flatwood soils will require a large initial capital investment, both for adequate drainage and for irrigation.

In addition, since these soils are inherently colder, the grower also must assume a somewhat greater risk. He must face up to the fact

(Continued on Page 33)

[1]Koo, Robert Chung-jen: A Study of Soil Moisture in Relation to Absorption and Transpiration by Citrus. Doctor of Philosophy dissertation, University of Florida, 1953.

STAY AHEAD WITH NATURAL CHILEAN NITRATE

"Many a game has been lost by letting down after you've got an early lead. It's usually pretty hard to get it back after you've lost it." On the athletic field or in the citrus grove, the formula for success is much the same—get ahead and stay ahead.

Let's assume you've been giving your trees nitrate nitrogen for several years. Many growers have been using the 80-20 formula (80% nitrate nitrogen, 20% ammonia nitrogen) quite regularly. If you did this, you've got a good lead—and you're probably way ahead of other growers who didn't do it. You have heavy crops of high-quality fruit . . . your trees are in healthy condition . . . and so is the soil in your grove.

Now that you're way ahead, it's no time to take it easy—no time to risk losing the lead you've got. The easiest and most economical way to protect your lead is to maintain your nitrate nitrogen program this year, next year, every year. It's equally important to specify Chilean Nitrate of Soda for the nitrate nitrogen in your mixed fertilizer.

Chilean Nitrate is the world's only natural combination of nitrate nitrogen, sodium and minor elements. The nitrate nitrogen assures quick action. The sodium content helps potash and phosphate requirements. And Chilean's minor elements help insure against losses due to "hidden" plant-food deficiencies. Either in straight applications, or 80-20 in your mixed fertilizer, make sure you use . . .

NATURAL CHILEAN NITRATE OF SODA

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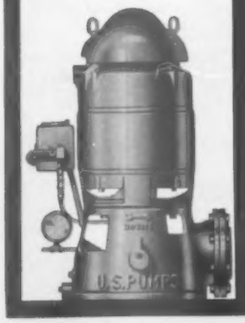

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CITRUS TREES—Make reservations now for coming season's planting. Ocklawaha Nurseries, Lake Jem, Florida.

DREAM NAVEL on sweet or Cleo, ORLANDO TANGELO, Budded or Nucellar. All standard varieties on sweet, Cleo, or lemon rootstock for Fall '57 and Spring '58. Contract budding on any variety for late Spring '58. GRAND ISLAND NURSERIES, Box 906, Eustis, Florida.

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Cherry Laurels, $15. per 1000 to $5. each; Laurel Oaks $12. doz. to $10 each. Ask for prices on Evergreens. B. Henry, 498 E. Pine Avenue, Crestview, Florida.

100 VARIETIES OF TREES, shrubs, roses and vines. Catalogue Free. Planters Nursery, McMinnville, Tenn.

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RAT TERRIER PUPPIES. Bred for Ratters. Crusaders Kennels, Stafford, Kansas.

Pekingese, Chihuahuas, Collies, Shepherds, Fox Terriers. Pete Motley, Wadley, Alabama.

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RUBBER STAMPS (to 3 lines). Self inking case $1. ppd. Business cards, $3. thousand ppd. WALTCO, Box 55, Kenosha, Wisconsin.

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WE SPECIALIZE in started Pullets for cage egg producers. Available the year round. We have White Leghorns of the famous Mount Hope Strain, this is one of the oldest high production strains in America. They are medium size Leghorns and adapt themselves readily to cage confinement. We are in position to make delivery of these pullets at different ages up to ready-to-lay. Better still, call and see our newly constructed modern plant in operation. Write or phone us. SUNNYBROOK POULTRY FARMS, INC., Dept. G, Box 468, Route 3, Ocala, Florida. Phone Marion 9-1525, Ray Arthur, Mgr.

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GREENGATES, LIVESTOCK gates—steel tubing, woven wire, light weight tough attractive ten foot $13.90—other lengths. Silver Lake Estates, Route 2, Leesburg, Florida.

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The United States meat industry is the world's biggest, with an output of 25 billion pounds a year.

"Now I've seen everything!"

Flatwoods

(Continued from Page 31)

that he can never produce fruit as economically as the man on soils with good natural drainage of the soil and cold protection.

Presently, our marketing system is such that growers are getting good returns on citrus. *So long as this condition prevails, and in the absence of good citrus land,* there is justification for the increased capital investment necessary to put inferior land into production.

Our production presently is high, and is increasing each year. Under such conditions, it is entirely possible for us to produce more citrus than we can profitably market.

Consequently, what may be a profitable situation today *may be marginal five to 10 years from now.* Should such a situation develop, citrus planted on flatwoods which were developed under the present economic conditions will unquestionably be some of the first to lose money.

LOOK at this "DROUGHT-GROWN" tree!

NO WATER since planting, except 1.6" rain, in Lakeland sand, in the 1956 drought

Arch Updike, Jr., Production Mgr., Alcoma Growers, Lake Wales, Fla.

Watering Cost Reduced by Terra-Lite® in Young Groves and Resets

Although his crews could water only 70 acres in addition to the 300-400 acres of young trees previously set, Arch Updike, Jr. planted an additional 130 acres with about 16 quarts of Terra-Lite brand vermiculite per tree. Each tree received about 20 gallons of water when set and then was left to weather the drought. Today, the UNWATERED TREES in Terra-Lite THRIVE as well as the 70 acres watered every ten days.

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Terra-Lite vermiculite is an inert mineral soil conditioner. It is in the form of expanded, porous granules, containing millions of cells which hold air, water, fertilizer at the roots—an underground reservoir of growth elements even when water is scarce.

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Processed in Florida to Save You Freight, Assures Prompt Delivery. Terra-Lite is packed in clean, lightweight 4-cubic foot bags. For full details, write, wire or phone your Terra-Lite Representative.

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Editorial Comment

One Solitary Life

HERE IS A YOUNG MAN who was born in an obscure village, the child of a peasant woman. He grew up in another village. He worked in a carpenter shop until He was 30, and then for three years was an itinerant preacher.

He never wrote a book. He never held an office. He never owned a home. He never had a family. He never went to college. He never put his foot inside a big city. He never traveled 200 miles from the place where He was born. He never did one of the things that usually accompanies greatness. He had no credentials but Himself.

While He was still a young man, the tide of public opinion turned against Him. His friends ran away. He was turned over to His enemies. He went through the mockery of a trial. He was nailed to a cross between two thieves. While He was dying, His executioners gambled for the only piece of property He had on earth—His robe. When He was dead, He was laid in a borrowed grave through the pity of a friend.

Nineteen centuries have come and gone . . . and today He is the central figure of the human race and the leader of the column of progress.

I am far within the mark when I say that all the armies that ever marched, and all the navies that were ever built, and all the parliaments that ever sat, and all the kings that ever reigned, put together, have not affected the life of man upon this earth as has that One Solitary Life.

Author Unknown

' ' '

Let's Make Decency Popular

AN ADVERTISING MAN recently proposed a refreshing challenge to advertisers and publishers. He said:

"We should make good citizenship fashionable."

In our opinion this is one of the best-sense and most worthwhile projects ever proposed to a group of people who really can do something about it. We believe that the ordinary good citizen, who year after year works for the benefit of others, is too frequently pushed aside for attention to those who go against good citizenship.

Why shouldn't we spotlight these folks a little? As Mr. Sidney R. Bernstein told ad and news men, "Let's crusade to make decency popular, and conversely, to make cheats and chislers and hoodlums and juvenile delinquents less popular and less attractive . . . "

One of the greatest contributions of the 4-H and FFA movements is the continuous exhibition of good character it displays through the good work of its boys and girls. It makes good character popular. It makes hard work fashionable.

You can help in this thought if you believe in it. Why not honor someone in your community who has served unselfishly? You can even help by personally showing your appreciation to them.

' ' '

Well Done, Mr. Ayers

FIVE BUSY and crucial years have passed since Ed L. Ayers became Commissioner of the State Plant Board. During that entire time, he has ably led his staff in spearheading campaigns—local and state-wide—against insect enemies of Florida farmers, citrus growers and ranchers. As has been pointed out by Dr. Ralph Miller of Orlando, State Board of Control chairman:

Never before have so many complicated and confusing crises come before the State Plant Board at the same time as have come before it in recent years. And Ayers has been a leader in bringing all of them near to a successful conclusion.

USDA officials' reaction to the cooperation of Florida authorities—through the good offices of Ayers—in the campaign against the Mediterranean fruit fly has been one of "almost amazement," according to control board member James J. Love of Quincy. But perhaps the highest tribute any man can receive is the type of high regard, respect and admiration given Ayers by his colleagues and everyone else who has worked with him.

Therefore it was with understandable regret that the State Board of Control accepted Ayers' resignation, which will become effective at the end of this year. We join the board members and residents throughout the state in expressing our regrets—and in wishing Mr. Ayers success, happiness and prosperity in the years to come.

We also congratulate Dr. W. G. Cowperthwaite upon his appointment as new Commissioner of the State Plant Board. We feel sure he will be a worthy successor to Mr. Ayers.

' ' '

Nature Lore and Legend

By Ruby Allgood Paris

Bird Sanctuaries

WITH the coming of repeating guns and automobiles, came the prospect of a wholesale depopulation of our birds and wildlife. Then their friends remembered the "Cities of Refuge" of Biblical history—places where an accused or hunted person could take sanctuary—and applied the same idea to birds and other hunted creatures.

Eventually, great tracts of land were set aside in many places over the globe for this purpose. The Junior Audubon Clubs, through which I've gained much of my knowledge of birds and flowers and other nature phenomena over a 20-year period, have done much to lend impetus to this drive.

Florida's Everglades sanctuary is wonderful the year 'round, but especially so during the winter months when the birds from over the northern world fly south to spend the winter.

The Everglades sanctuary sponsors boat trips in January, February and March for those who want to study birds and see all kinds of big herons and other water fowl in their natural habitat. There are walks built out over the swamps, so that visitors may watch the birds and alligators—which go right on about their business of feeding or resting, just as if there were no humans about.

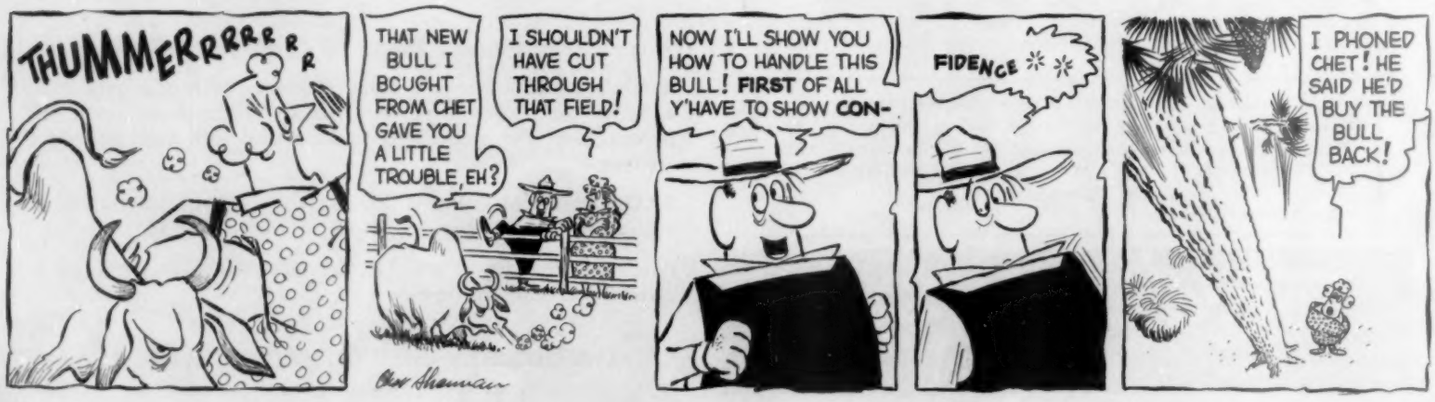
Gallinules there are almost tame enough to let one touch them. These are water birds, about the size of a pigeon and prettily colored, which run about the water lily pads.

And the coots. . . . Well, this bird—made famous in Lanier's "Marshes of Glenn"—is fun to watch as it runs the water with the swiftness of a modern jet plane.

Longfellow's "Birds of Killingworth" concerns the question of birds and flowers and of human survival. The description of the banishment of the birds from the town of Killingworth, and of the woes of the following summer when the townfolk experienced spiders and other insects and near starvation, is an object lesson for those who do not love birds.

"Remember too; 'Tis morning somewhere, and above
The awakening continent, from shore to shore,
The birds are singing ever more."

THUMMER GREEN — — - - - SHARMAN


THUMMERRRRRR
THAT NEW BULL I BOUGHT FROM CHET GAVE YOU A LITTLE TROUBLE, EH?
I SHOULDN'T HAVE CUT THROUGH THAT FIELD!
NOW I'LL SHOW YOU HOW TO HANDLE THIS BULL! FIRST OF ALL Y'HAVE TO SHOW CON-
FIDENCE
I PHONED CHET! HE SAID HE'D BUY THE BULL BACK!

Florida Spring Potato Planting Reduction Suggested By USDA

FLORIDA GROWERS of spring potatoes will reduce their 1958 plantings 15%, to about 26,900 acres—*IF* they follow a U. S. Department of Agriculture recommendation.

Grower action in this case is voluntary. However this recommendation is in line with one made by the Florida Agricultural Outlook Committee which suggested a 20% reduction in acreage of all potatoes grown in the state.

Even this reduced acreage could result in a bumper crop . . . and possibly depressed prices . . . according to Dr. F. S. Jamison, Florida Agricultural Experiment Stations vegetable crops department head.

Last year's planting of 31,700 acres was a record; with big yields, it could have been disastrous. As it turned out, returns to growers were not favorable because of a large carry-over of winter potatoes in the north.

Florida produces practically all of the early spring crop. Production has increased since World War II and has usually sold at fair prices, due to the demand for Florida potatoes by the potato chip industry.

The USDA annual acreage-marketing guide also recommends that potato growers throughout the nation, as a whole, cut 1958 acreage 9% below the 1957 level in an effort to bring 1958 spring production into balance with probable market requirements.

It further recommended that growers in the 11 late spring states plant only 161,600 acres in 1958, compared with 174,900 acres in 1957.

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ZINEB

DITHANE Z-78 (zineb) was used extensively in last summer's citrus spray program. Owners and operators agreed that DITHANE Z-78 gave excellent control of rust mites—the best they had ever seen.

One important reason DITHANE Z-78 has been so widely accepted by Florida citrus growers is this: DITHANE Z-78, because it gives longer lasting protection and better control, can save you the cost of repeated applications of sulfur . . . and DITHANE Z-78 is compatible with oil and other pesticides.

To get better control of rust mites, to save yourself money and trouble, spray DITHANE Z-78 as soon as mites begin to build up. For Fall application use only 3 pounds to 500 gallons of water. Consult your Experiment Station or pesticide supplier for more details.

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Enrich your present acreage to produce bigger yields—it's more economical than adding acreage. Florida Favorite Fertilizer, specially formulated for Florida soil and growing conditions enriches the soil—gives you more profit per acre! Modern growers and ranchers order the perfect fertilizer for each application—Florida Favorite Fertilizer. FFF brand is different!

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Complete field service, coordinated with spreading requirements is rendered by a fleet of 15 trailer truck units. Fertilizer mixtures are formulated according to actual needs. Here's a service that really saves you time and money!

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The new organic fungicides that have received so much publicity in the past few years may be superior to some of the older standard sprays **for certain isolated applications.** But it is well to remember that many of these new "miracle" sprays have yet to stand the test of time.

We suggest that unless the superiority of a new fungicide is conclusively proved by exhaustive tests under severe climatic conditions, it would be wise to stick with the dependable fungicides.

Seventy years of experience have demonstrated to farmers, orchardists and agronomists that copper sulfate fungicides, if properly formulated and applied, are completely dependable, chemically effective under a wide variety of conditions . . . and last but not least . . . **economically practical!**

Triangle Brand Copper Sulfate & Basic Copper Sulfate are recommended for controlling the following diseases:

Bitter Rot — Scab — Blotch — Fruit Spot — Black Rot
Cloud & Phoma Fruit Spot of Apple — Anthracnose of Cantaloupe, Watermelon & Small Fruits — Bitter Rot, Black Rot & Downy Mildew of Grape
Boot, Tomato & Spinach Damp-off (Seed Treatment) — Lettuce Drop
. . . and many diseases attacking the foliage and fruit of citrus and nut trees.

Control POND SCUM and ALGAE in farm waters with Triangle Brand Copper Sulfate

FENCE POST treatment with Triangle Brand Copper Sulfate prevents decay and termite damage

Send today for information on these important uses of copper sulfate

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In Florida, magnesium is now classed as a primary plant food together with nitrogen, phosphorous, and potash.

The recommendations of the Florida Citrus Experiment Station at Lake Alfred, stress the need for large application of magnesium for Citrus in soluble form and state that it is usually applied as a Sulphate.

Be sure that your fertilizer manufacturer includes EMJEO in your mixtures as a dependable source of soluble magnesium.

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A look ahead at Florida farming

Atoms and Agriculture

By WILLIAM G. MITCHELL
Assistant Editor Florida Agricultural Experiment Stations

THE ATOMIC AGE may have begun with the dropping of the first atomic bomb on Hiroshima. But scientists at the Florida Agricultural Experiment Stations were using radioactivity from atoms as research tools almost two years *before* that important historical event.

Dr. J. P. Feaster, who is primarily concerned with radioactive isotope work at the Animal Nutrition Laboratory, says these studies with isotopes—begun so long ago—have meant a great deal to Florida's livestock industry. And similar studies will continue to be of importance.

Scientists responsible for the first studies here with radioisotopes as tools of research were Dr. George K. Davis, head of the Animal Nutrition Laboratory, and Dr. Cyril Comar, now with the Atomic Energy Commission.

Dr. Feaster points out that isotopes are radioactive forms of elements. This radioactive form is unstable—that is, it is constanly changing or breaking down. In doing so, it gives off particles or rays. These rays make it possible to follow these "tracer" elements with a Geiger counter, which detects the particles given off. Scientists feed animals the radioactive form of the element they want to trace, then with the Geiger counter follow its pathway through the animal's body.

In this way, the scientists can find where the minerals go in the animal's body; how much is absorbed into the tissues and bones; and how much is simply excreted without being used. Thus the researchers have been able to find out how much of each mineral should be in the ration of animals.

A study of a mineral deficiency was the first case in which an isotope was used at the Florida Station. In this test, the scientists determined that the amount of cobalt needed by animals is very small—less than one thousandth part of a gram a day.

However, this small amount is very important. Without cobalt, cattle remain in poor condition, have rough hair coat, and are extremely weak.

Other isotope work has proved that while cattle use only a small amount of copper from their diet, it goes to all the tissues throughout the body. Another study showed that minerals applied to pasture as fertilizer are of direct benefit to the cattle through the forage. Still another line of isotope research, according to Dr. Feaster, involves studies of the transfer of minerals from the pregnant female to the developing young.

PROTEIN IN FORAGE

Protein is a very important element in feed in Florida, since this state can be called a protein-deficient area. Thus the amount of protein in forage, as affected by management, is an important study.

Several members of the Agronomy Department—including Carl S.

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Hamlin Oranges
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119 E. Reynolds St. (Phone 4-1131)
Plant City, Florida

GEIGER COUNTER SURVEY METER is used by Dr. George K. Davis (right) to determine the path taken by a radioactive capsule just given to the experimental calf. Assistant is Dr. Harry Roberts, then a graduate student working with Dr. Davis.

Hoveland, Dr. O. C. Ruelke, and Dr. Henry Harris—have been conducting studies into the way Florida forage crops respond to changing environmental conditions.

Clipping studies with pearl millet showed that the height of the stubble left after clipping (an indication of the effect of different levels of grazing) had a rather small effect on the yield of forage and the protein content. That is, they found that close cutting *itself* does not reduce forage yield or protein content of the forage produced later.

The scientists found that when the plants were clipped often—that is, whenever the plants reached a height of 12 to 18 inches—protein content remained higher in the plants all season. The chief factor affecting yield of forage and protein content was the height of the plant when cutting began.

In another test, these same scientists tried clipping three varieties of oats to determine yields. They found the lowest forage yields were obtained when the oats were clipped each time they reached 6 inches in height to a stubble height of 2 inches, and from plants allowed to grow to 18 inches before being clipped back to 9 inches.

Under irrigation, the best yields came from oats allowed to grow to 12 inches before they were clipped back to 5 inches. On unirrigated plots, plants allowed to grow to 12 inches before being clipped back to 2 inches gave the best yields.

Irrigation was found to be very beneficial in these experiments. In general, it increased oat forage yield by one-third, the scientists state.

QUALITY PUREBRED BULLS

An animal husbandman of the Florida Agricultural Experiment Stations says that it's no longer good enough to buy bulls on the basis of their being purebred. Dr. A. C. Warnick points out:

"In the past, many cattlemen buying a bull felt that because he was purebred he was a good bull. Most times they were right—but many times they were wrong.

"At present, we must qualify that statement to say *high quality* purebred bulls."

High quality will be the key to future improvement to beef cattle in this country, Dr. Warnick believes. Purebred breeders will need to sell for meat many of the bulls now being sold for breeding, and will need to improve the quality of their own herds.

In selling bulls, every breeder should remember that the bull he sells is an ambasador for his ranch, Dr. Warnick declares. Unless the bull the breeder sells a commercial cattleman improves the performance of his cattle, he will look elsewhere for his next bull.

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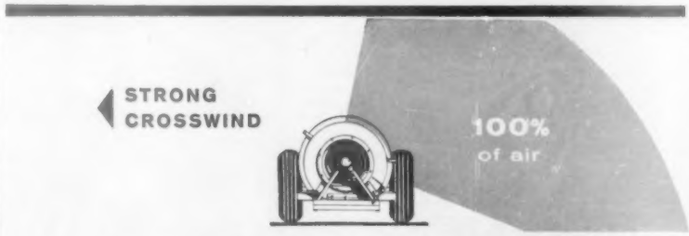

When other rigs head for the barn, the Myers remains effective by delivering 45,000 cubic feet of air at 90 miles per hour out one side.

See the Myers in action with your own eyes under extreme wind conditions. Arrange a demonstration in your own orchard. Contact your nearest Myers sprayer dealer today.

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They Made Good — The Hard Way

By THOMAS J. HUGHES

"I MANAGE the poultry farm; my job is strictly *production* of quality eggs. My wife processes, markets and delivers our eggs. In other words, she brings in the cash to pay our bills," says Otto Ashworth, Homestead poultryman.

Poultrymen must have a good market for their eggs—or they had better do something else. The Ashworths found this out the hard way. . . .

The history of this Homestead poultry operation is new but somewhat educational. The Ashworths have, since June 1954, become efficient producers and have established their own market which demands over 100 cases of eggs weekly.

In the beginning, mid-1954, the Ashworths were interested only in egg production. Their total output, they thought, would be marketed through a local egg dealer.

However, following Easter of 1955, the buyer stopped taking their eggs. The shock of having no place to sell the eggs from the 3,000 layers that were then in full swing presented a serious problem.

Up until that time, Mrs. Ashworth had been helping her husband care for the flock. But she immediately took on a new job: head of a one-person sales force. Thus the farm became a two-phase operation, with two directors.

Outlets Sought

Mrs. Ashworth began calling on restaurants, hospitals, grocery stores, and all other possible outlets in order to sell the quality eggs from their flock. Within six months' time, she not only sold their entire output but had to buy eggs from fellow producers in order to supply her customers' needs! Many of these original customers are still buying all their eggs from Mrs. Ashworth.

Every egg she sells—whether produced by their own 5,000 birds or bought from neighboring farms —is run through the Ashworths' grading room and must meet rigid quality specifications. The Ashworth farm also has a refrigeration room and an egg washer.

A foreign-made panel truck, insulated to shut out heat and keep in quality, is used for delivering eggs. At the time of delivery, the eggs on an average are approximately 48 hours old. Eggs are cartoned or crated, according to customer dictates.

While his wife was busy establishing this most desirable market for their eggs, Mr. Ashworth was equally as busy expanding their production facilities. Many of his practices are tailor-made to fit into the marketing operation.

Replacements

Replacement birds are bought in

1958 FUL-O-PEP CHICK STARTER
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CHICKS WITH A FUTURE!

GROWS BIRDS FIT . . . NOT FAT
Give your baby chicks the *extra growth power* they need to *grow sound, sturdy* bodies and strong, rugged bones. Start 'em on new, nutritious Ful-O-Pep Chick Starter. It grows chicks fit . . . not fat!

98% OR MORE OF CHICKS LIVE
New vitamin-rich Ful-O-Pep is highly fortified with vital health ingredients to give your chicks more vim and vigor . . . *added life protection,* too. Many poultrymen report over 98% livability, some 100%. What better insurance can you provide for your future layers?

BUILDS AMERICA'S BEST PULLETS
For 15 years in the National Egg Laying Tests—birds grown on Ful-O-Pep Feeds averaged laying *more eggs,* and *bigger eggs,* than birds grown on other feeds . . . official proof that Ful-O-Pep grows America's best laying pullets.

PRODUCE 18 MORE TOTAL EGGS
Research shows that pullets grown on the famous Ful-O-Pep Restricted Feeding Plan *laid 18 more eggs* than full-sisters grown on forced-feeding plans. Their eggs were bigger, too—averaging almost 1½ ounces more, per dozen!

Ful-O-Pep's restricted feeding plan
SAVES $400 PER 1000 BIRDS

You buy only 2 lbs. Chick Starter—5 lbs. Growing Mash per bird on range on the Ful-O-Pep Restricted Feeding Plan. You save up to 8 lbs. total feed per bird, over forced-feeding plans, or about *40¢ per bird!*

Simplified plan makes feeding easy

You feed only 5 lbs. of Ful-O-Pep Growing Mash per 100 birds—5 days a week. Feed oats every day. It's that simple! Ask your Ful-O-Pep Dealer how you, too, can grow big, profitable pullets . . . and *save about 40¢ per bird!*

THE QUAKER OATS COMPANY
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K-137

KimberCHIKS ARE BRED FOR COMMERCIAL PRODUCTION

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AUTHORIZED KimberCHIK. ASSOCIATE HATCHERY

PRODUCTION of quality eggs by a 5,000-bird flock is the primary job of Otto Ashworth.

MARKETING—finding outlets for their eggs and delivering them is done by Mrs. Ashworth.

batches of 500. Getting this small quantity of birds assures a constant supply of all egg sizes. It also gives a more steady supply of eggs throughout the entire year.

The 500-bird replacement flocks also have two other advantages, according to the poultryman. First, he points out, smaller units make for better observation of the birds.

Secondly, medication is more easily administered. All birds get their medication in the drinking water, where possible. Ashworth has a 30-gallon drum so elevated that he can medicate a pen of birds by only turning a valve.

Both cage and floor flocks are present on the farm. Future plans, however, call for floor flocks only.

Floor birds are less expensive in that they are easier to care for, Ashworth points out; they require about one-fourth the labor that cage birds do. Floor birds also require less investment per bird.

Ashworth further expressed the belief that caged birds have greater mortality than those reared on the floor.

Anti-mechanical Feeders

Unlike most poultrymen, the Homestead operator does not prefer mechanical feeders. He reasons that poultrymen with mechanical feeders become lax; they lose the close contact with their birds which is most vital to a good operation; they will not find the sick or cripple birds in time to salvage them. Furthermore, Ashworth believes, mechanically-fed birds tend to be more flighty.

Pullets of the Homestead operation are raised on the range. Here they have access to grass, permanent watering facilities, and 12x16-foot portable range shelters with welded wire floors to house them at night.

The birds are protected from the heat by roofs coated with a reflectant paint. This reduces the inside temperature some 12 to 14 degrees.

Before going into the laying flock, pullets are kept on the range until they are around 20 weeks of age.

Expansion is still underway, but at a moderate rate as Ashworth does the building himself. Upon completion, he plans to have a 10,000 bird unit.

* * *

Turkeys Prosper on Low Protein Diet

Low-protein diets are all right for turkey poults on good pasture, University of Wisconsin researchers say after three years of study. Low protein forces the birds to take advantage of the good low-cost feed in pasture legumes and grasses.

Pasture improved gain and feed efficiency most when the mashes were low—around 10 and 15%—in protein rather than the 20% normally fed. The 10% protein diet was corn and oats, with minerals and vitamins added.

However the pasture *has* to be good, the researchers warn. Turkeys on poor pasture with low-protein feeds showed deficiencies of an essential feed ingredient, lysine.

Figures on your Settlement Sheets will convince you that premiums for "Large" over "Mediums" and "Small" make the BIG DIFFERENCE.

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Enteritis Costs Profit Dollars

AN AILMENT of chickens—known as "enteritis"—is costing poultrymen many profit dollars, according to Dr. M. W. Emmel, Florida Agricultural Experiment Station veterinarian.

The malady is described as inflamed mucous membrane of the intestinal tract. It is often brought on by internal parasites and coccidiosis.

Monetary losses are due to retarded growth, decreased egg production, development of cull birds, and death of some fowls. Widespread reports of the ailment indicate that it is a major problem of Florida poultrymen.

Enteritis often hits a flock of pullets when they reach maturity, or at the egg-laying stage. Early treatment for enteritis will prevent serious losses.

Before treating a flock for the condition, it is necessary to discover the cause of enteritis, Dr. Emmel reminds poultrymen. In case of coccidiosis or worm infestation, first treat the birds for these parasites.

Recommended treatment for enteritis is 200 grams of aureomycin or terramycin per ton of feed. Place the ailing birds on this antibiotic-feed mixture for about a week.

Automatic Egg Vendors

Coin-operated roadside vending machines now make fresh refrigerated eggs available to Fort Collins, Colorado, consumers any time of the day or night.

The refrigerated dispensers hold 120 one-dozen cartons of eggs. They are filled with fresh medium and large grade AA eggs every day.

Colorado Experiment Station economists are cooperating with a couple of poultrymen near Fort Collins in a study to determine whether these vending machines will benefit the egg producer. A part of the sutdy will be to find out whether consumers will take the time and effort to drive to the farm for eggs.

Biggest saving for the poultryman, the Colorado researchers say, will be time; he won't have to spend time waiting on customers when he should be caring for his flock. The study will be continued for a year.

* * *

"Wrong number."

DEKALB RESEARCH IS WORKING FOR YOU!

Dr. E. E. Schmetzler heads DeKalb's Research and Poultry Breeding Programs.

Dr. Dean Jones is DeKalb's Assistant Poultry Geneticist.

Dr. W. E. Briles works exclusively with blood types or groups as an aid in developing better poultry.

Dr. Wayne Moore is a well-known Poultry Pathologist and Doctor of Veterinary Medicine.

Capable facilities, completely equipped, plus the "know-how" of some of the best poultry research men in the country, leaves no stone unturned in seeking and searching for better DeKalb Chix.

The multiplicity of these research projects can mean but one thing—new discoveries—new information—better results.

DeKalb is large enough to carry on extensive breeding experiments, yet small enough to be concerned with each individual problem.

What does this mean—it means only that the poultryman can look to DeKalb for better and better chix—chix bred to live and to lay—chix developed to make efficient use of feed—to return more and more money in profits.

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IF YOU KEEP RECORDS, YOU'LL KEEP DEKALB CHIX

Top-Dress Pastures

OATS, RYE and wheat intended for winter grazing need to be bolstered with a nitrogenous top-dressing about now.

Grain forages sown in October or early November will produce a lusher growth with plenty of plant food on hand, advises Russell Henderson, Extension Service agronomist. He continues:

Sources of nitrogen available to the Florida farmer are nitrate of soda, ammonium nitrate, ammonium sulfate, and non-pressure liquids. Ammonium nitrate, because of the large local supply, is one of the cheapest forms.

The fertilizer should be spread at a rate to supply from 20 to 32 pounds of nitrogen per acre. This means applying 100 pounds of ammonium nitrate or 200 pounds of nitrate of soda (or equivalent from other sources) per acre.

Never apply fertilizer to plants until the dew has dried from the field. Otherwise, the chemical may burn the leaves.

Since oats and wheat are great users of nitrogen, these crops will need another application by the first of February—especially when the fields are heavily grazed.

Because rye seeds earlier, a second treatment of this crop would probably be uneconomical, Henderson says.

Trophy-Winning Livestock Judging Teams

PICTURED ABOVE, left to right, seated, are: Lee Haygood of Jacksonville, "B" team, first in Sheep and 2nd in contest in Atlanta; Arlin Hawkins of Sarasota, "A" team; Bob Hall, Bushnell, "A" team, high in Hereford classes in Atlanta; Douglas Custer, Miami, "B" team. STANDING, left to right: Don Wakeman of the University of Florida's Department of Animal Husbandry and Nutrition, coach; Seaborn Bell of Reddick, "A" team, second individual at Memphis; Herb Prevatt, Ocala, "A" team, first individual at Atlanta and sixth at Memphis; Hugh English, Alva, "B" team; John Thomas, Fort Pierce, "B" team; Don Laws, Crestview, "A" team, first in Swine at Memphis; Glen Cormack, Miami "B" team, and Dr. M. A. Brooker, Dean of the School of Agriculture.

Once again this year, the University of Florida Livestock Judging Team won high honors in sectional contests. It recently placed third at Memphis and first at the Southeastern Judging Contest in Atlanta.

In addition, the "A" Team was second in Swine at Memphis; first in Hereford and Angus cattle, and in Poland China and Hampshire hog classes. Besides placing 10th at Memphis and third at Atlanta, the Florida "B" Team was first in Sheep classes in the Atlanta contest.

Eight Southern teams competed in the Atlanta Contest; 13 in the Memphis meet. Louisiana State University was the grand winner of the Mid-South Contest in Atlanta.

The Florida Judging Team is sponsored by the Florida Angus Breeders, the Florida Hereford, the Florida Shorthorn and the Eastern Brahman Breeders Associations, and by the State Department of Agriculture through the courtesy of Nathan Mayo and L. H. Lewis.

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Lead Arsenate	TDE	Dieldrin
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BHC	Phygon	Endrin
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Farmers: Grow Your Own Flue-Cured Tobacco Plants

FOR QUALITY flue-cured tobacco plants when you want them, plan now to seed tobacco beds.

Any soil suitable for growing tobacco is suitable for a plant bed. Normally, 100 square yards of bed will furnish tobacco plants for three to four acres, says S. L. Brothers, Extension Service assistant agronomist.

Brothers suggests:

Locate the bed on a well-drained spot that is convenient to a water supply. If possible, lay out the bed on a north-south direction and on a southern exposure that is protected from cold winds.

To prevent weed seeds from causing trouble later, remove the grass and stubble from an area around the bed. Next, disk seed beds into top condition and hand-rake until smooth.

About a week before seeding—when the temperature is above 50°—treat the bed with methyl bromide gas to kill weed seeds and nematodes. Also a week or so before sowing the tobacco seed, work two pounds of a 6-9-3 fertilizer into each square yard of bed.

January 1-15 is the suggested planting period. Sow one ounce of seed per 100 yards of bed area. Mixing the seed with dry sand or fertilizer will aid in getting an even seed distribution.

Following seeding, trample or roll bed to bring seed in contact with the soil. Moistening the bed lightly also will settle the seeds.

At this point, apply about three pounds of a 1½% chlordane bait on the bed to control cutworms and mole-crickets.

Side walls of 1x8-inch boards or logs around the bed are recommended. Cover the bed with cheesecloth to help hold moisture and protect the young seedlings from cold damage until the plants are almost large enough to transplant.

Check plants daily for moisture; apply water when needed.

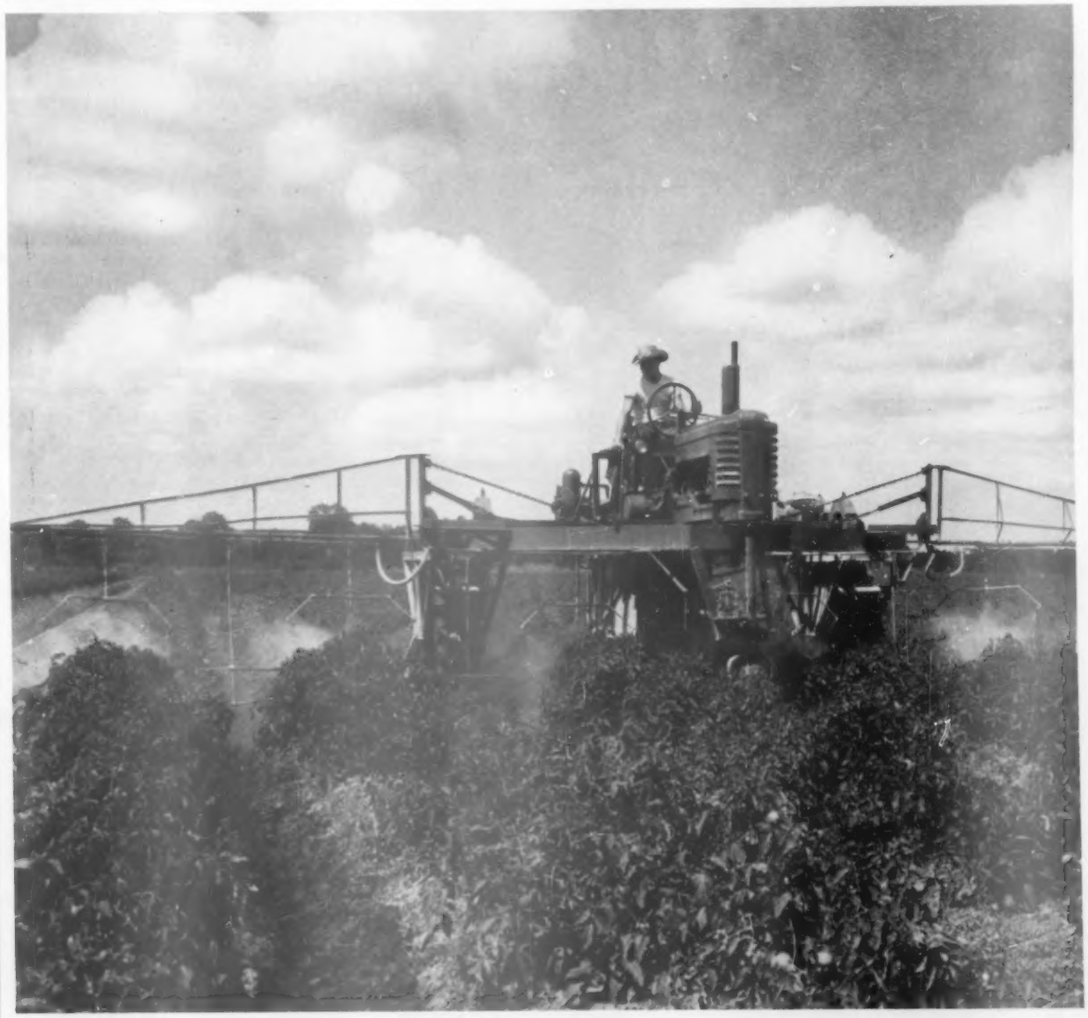
Economy-minded farmers can grow plants cheaper than they can buy them, Brothers adds.

Dry-Curing Pork

Two days per pound, under most conditions, is the standard time for curing pork by the dry method at home. Under farm conditions, however, it's advisable generally to allow three days per pound for the process.

Sides of bacon will cure in from 10 days to two weeks. A 10-pound ham will cure in 30 days.

At the end of the curing period, scrub off the salt with water. After letting the meat dry, you can proceed to smoke it.



How to spray close to harvest... without residue problems

Legislation* now specifically limits the amount of insecticide residue your crops may have at harvest. As a result, many insecticides can no longer be used close to picking or cutting. Malathion is an exception. It's the best of the few insecticides you *can* use to stop late season pests. Here's why . . .

Though malathion kills 82 pests attacking 47 crops – including aphids *and* mites – it is low in toxicity to man and animals. That's why relatively high residues at harvest are permitted. Malathion residues also disappear rapidly. They will be well below established limits *even when applied as close as 72 hours before harvest of many crops.* (24 hours on beans!) See chart for timing of last application on most important vegetables.

Free Folders – Write to American Cyanamid Company, Phosphates and Nitrogen Division, Dept. V-3, 30 Rockefeller Plaza, New York 20, N. Y.

** Public Law 518 (Miller Bill) establishes residue tolerances for insecticides. Crop carrying excess residues may be confiscated by the Food and Drug Administration.*

INTERVAL BEFORE HARVEST FOR LAST APPLICATION OF MALATHION

NEW — 24-HOUR INTERVAL FOR BEANS.
The time interval for beans has now been reduced from 3 days to 24 hours from harvest!

72 HOURS		7 DAYS	
Broccoli	Peppers	Beets	Kale
Cucumbers	Potatoes	Brussels Sprouts	Lettuce
Eggplant	Rutabagas	Cabbage	Mustard
Melons	Squash	Cauliflower	Spinach
Onions	Tomatoes	Celery	Turnips
Peas			

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Scientists Receive FFVA Awards

FFVA PLAQUE recipients shown above, from left, are: Dr. J. R. Winston, Orlando; Dr. R. V. Allison, Belle Glade; Dr. J. R. Christie, Gainesville; U. of F. President Dr. J. Wayne Reitz who made the presentations; Dr. R. W. Ruprecht, Sanford, and Dr. J. M. Walter, Bradenton.

For outstanding contributions in the field of agriculture, five research scientists were honored by the Florida Fruit and Vegetable Association during its annual convention at Miami Beach in October. The association's Distinguished Service Award for 1957 went to the Florida Farm Bureau.

Roy Vandegrift, Jr. of Pahokee was elected new president of the FFVA during the convention.

Winners of the research plaques and their accompanying citations were as follows:

Dr. J. R. Winston, USDA, Orlando: in recognition of his study and evaluation of the hydrocooling and icing practices for Florida sweet corn during 1950-51. His study resulted in basic information about the best shipping practices to retain the quality of sweet corn.

Dr. R. V. Allison, Everglades Experiment Station, Belle Glade: for his discovery during the period of 1926-31 of the need for copper and other trace elements on peat soils in the Everglades. His findings were of major importance to both the vegetable and the cattle industries.

Dr. J. R. Christie, University of Florida, Gainesville: for research contribution to the vegetable and sub-tropical fruit industries of Florida in recognizing and publicizing the importance of ectoparasitic nematodes, including the stubby root, sting, awl, and dagger nematodes.

Dr. R. W. Ruprecht, Central Florida Experiment Station, Sanford: in recognition on his part in demonstrating in 1937 that cracked stem of celery was due to the deficiency of boron in the soil. He corrected the deficiency by soil application of borax.

Dr. J. M. Walter, Gulf Coast Experiment Station, Bradenton: for developing and releasing the Manalucie tomato in 1953. This variety has proven particularly popular and suitable to the grower of vine-ripened tomatoes.

Accepting the FFVA's Distinguished Service Award on behalf of the Florida Farm Bureau were Edwin H. Finlayson, president, and Thomas K. McClane, Jr., executive vice president.

Save Your Watermelon Seed By Poisoning Marauding Rats

Watermelon seeds and other vegetable seeds to be sown in Florida in January are favorite snacks for field mice and rats.

Marauding mice can ruin a newly-planted field and necessitate the replanting of expensive seed. But, thanks to modern chemistry, a truck gardener does not have to put up with rodent trouble.

Zinc phosphide bait—properly used—will kill off the mice and rat population.

Don't use bright-colored baits; by so doing, you may be helping to reduce your bird allies. This warning to growers is issued by V. L. Johnson, rodent control specialist with the Florida Agricultural Extension Service.

On the other hand, the specialist continues, zinc phosphide coats the bait a dark grey. While the birds will ignore this color of bait, the rodents will accept it.

Bait should be put out a couple of weeks before planting. It should also be repeated lightly at time of planting to make sure that young rats and mice, survivors of the first baiting, are killed.

Place the bait around the borders of the field every 15 to 20 feet, and around debris or uprooted stumps within the field. The poison oxidizes when exposed to moist air, making it pretty harmless after a few days.

Since it requires only a few poisoned kernels to kill a rodent, it is useless to over-bait. Besides, it's expensive and wasteful.

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"We use 'Na-Churs' everytime we spray. Our tomatoes are suckering all the time showing excellent growth during a period when tomatoes on other farms are not producing."
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"'Na-Churs' used on our young trees seemed to give a lift to the trees during a dry spell. We are well satisfied."
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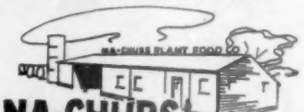

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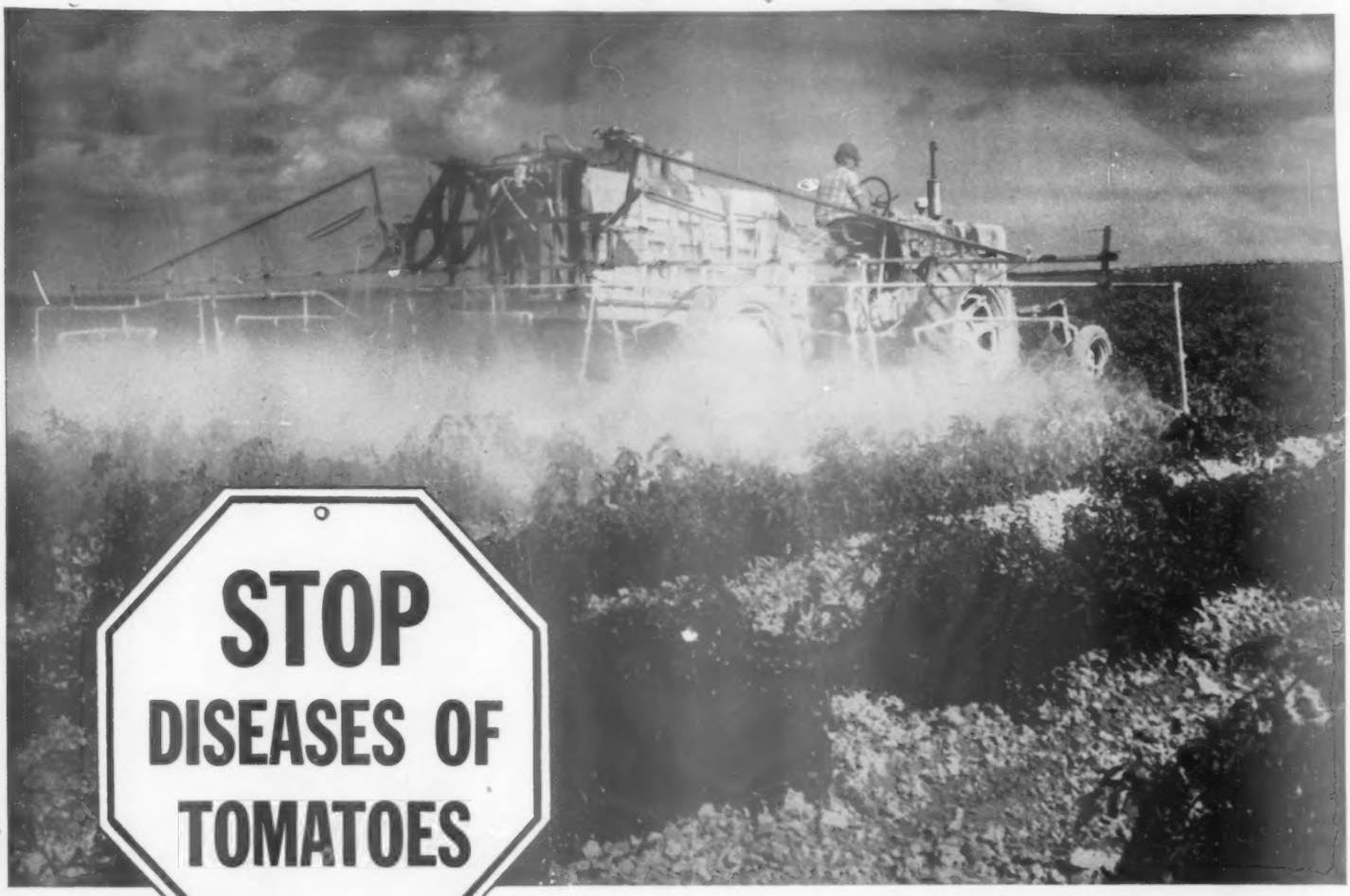

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says Mr. W. C. Sanders
Wildwood, Florida

"We had clean tomatoes, free of blight, throughout the crop in 1957 because of Du Pont 'Manzate',"
says D. E. Proctor & V. E. Vaughan
Ocala, Florida

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